SEQUENCE LISTING

<110> Hudson, Thomas J.
      Engert, James C.
      Richter, Andrea

<120> IDENTIFICATION OF ARSACS MUTATIONS AND
      METHODS OF USE THEREFOR

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Asp Leu Arg Leu Ser Ile Ser Val Ile Asp Ser Ser Asp Glu Ala Thr
    210                 215                 220
Ile Arg Leu Ala Asn Met Leu Lys Ile Glu Gln Leu Lys Thr Thr Ser
225                 230                 235                 240
Cys Leu Lys Leu Val Leu Lys Asp Ile Glu Asn Ala Phe Tyr Ser His
                245                 250                 255
Glu Glu Val Thr Gln Leu Met Leu Trp Val Leu Glu Asn Leu Ser Ser
                260                 265                 270
Leu Lys Asn Glu Asn Pro Asn Val Leu Glu Trp Leu Thr Pro Leu Lys
            275                 280                 285
Phe Ile Gln Ile Ser Gln Glu Gln Met Val Ser Ala Gly Glu Leu Phe
    290                 295                 300
Asp Pro Asp Ile Glu Val Leu Lys Asp Leu Phe Cys Asn Glu Glu Gly
305                 310                 315                 320
Thr Tyr Phe Pro Pro Ser Val Phe Thr Ser Pro Asp Ile Leu His Ser
                325                 330                 335
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Leu Arg Gln Ile Gly Leu Lys Asn Glu Ala Ser Leu Lys Glu Lys Asp
            340                 345                 350
Val Val Gln Val Ala Lys Lys Ile Glu Ala Leu Gln Val Gly Ala Cys
            355                 360                 365
Pro Asp Gln Asp Val Leu Leu Lys Lys Ala Lys Thr Leu Leu Leu Val
            370                 375                 380
Leu Asn Lys Asn His Thr Leu Leu Gln Ser Ser Glu Gly Lys Met Thr
        385                 390                 395                 400
Leu Lys Lys Ile Lys Trp Val Pro Ala Cys Lys Glu Arg Pro Pro Asn
                405                 410                 415
Tyr Pro Gly Ser Leu Val Trp Lys Gly Asp Leu Cys Asn Leu Cys Ala
                420                 425                 430
Pro Pro Asp Met Cys Asp Val Gly His Ala Ile Leu Ile Gly Ser Ser
            435                 440                 445
Leu Pro Leu Val Glu Ser Ile His Val Asn Leu Glu Lys Ala Leu Gly
        450                 455                 460
Ile Phe Thr Lys Pro Ser Leu Ser Ala Val Leu Lys His Phe Lys Ile
    465                 470                 475                 480
Val Val Asp Trp Tyr Ser Ser Lys Thr Phe Ser Asp Glu Asp Tyr Tyr
                485                 490                 495
Gln Phe Gln His Ile Leu Leu Glu Ile Tyr Gly Phe Met His Asp His
            500                 505                 510
Leu Asn Glu Gly Lys Asp Ser Phe Arg Ala Leu Lys Phe Pro Trp Val
            515                 520                 525
Trp Thr Gly Lys Lys Phe Cys Pro Leu Ala Gln Ala Val Ile Lys Pro
    530                 535                 540
Ile His Asp Leu Asp Leu Gln Pro Tyr Leu His Asn Val Pro Lys Thr
545                 550                 555                 560
Met Ala Lys Phe His Gln Leu Phe Lys Val Cys Gly Ser Ile Glu Glu
                565                 570                 575
Leu Thr Ser Asp His Ile Ser Met Val Ile Gln Lys Ile Tyr Leu Lys
            580                 585                 590
Ser Asp Gln Asp Leu Ser Glu Gln Glu Ser Lys Gln Asn Leu His Leu
            595                 600                 605
Met Leu Asn Ile Ile Arg Trp Leu Tyr Ser Asn Gln Ile Pro Ala Ser
    610                 615                 620
Pro Asn Thr Pro Val Pro Ile His His Ser Lys Asn Pro Ser Lys Leu
625                 630                 635                 640
Ile Met Lys Pro Ile His Glu Cys Cys Tyr Cys Asp Ile Lys Val Asp
                645                 650                 655
Asp Leu Asn Asp Leu Leu Glu Asp Ser Val Glu Pro Ile Ile Leu Val
            660                 665                 670
His Glu Asp Ile Pro Met Lys Thr Ala Glu Trp Leu Lys Val Pro Cys
        675                 680                 685
Leu Ser Thr Arg Leu Ile Asn Pro Glu Asn Met Gly Phe Glu Gln Ser
    690                 695                 700
Gly Gln Arg Glu Pro Leu Thr Val Arg Ile Lys Asn Ile Leu Glu Glu
705                 710                 715                 720
Tyr Pro Ser Val Ser Asp Ile Phe Lys Glu Leu Leu Gln Asn Ala Asp
                725                 730                 735
Asp Ala Asn Ala Thr Glu Cys Ser Phe Leu Ile Asp Met Arg Arg Asn
            740                 745                 750
Met Asp Ile Arg Glu Asn Leu Leu Asp Pro Gly Met Ala Ala Cys His
            755                 760                 765
Gly Pro Ala Leu Trp Ser Phe Asn Asn Ser Gln Phe Ser Asp Ser Asp
    770                 775                 780
Phe Val Asn Ile Thr Arg Leu Gly Glu Ser Leu Lys Arg Gly Glu Val
785                 790                 795                 800
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Asp Lys Val Gly Lys Phe Gly Leu Gly Phe Asn Ser Val Tyr His Ile
            805                     810                 815
Thr Asp Ile Pro Ile Ile Met Ser Arg Glu Phe Met Ile Met Phe Asp
            820                 825                 830
Pro Asn Ile Asn His Ile Ser Lys His Ile Lys Asp Lys Ser Asn Pro
            835                 840                 845
Gly Ile Lys Ile Asn Trp Ser Lys Gln Gln Lys Arg Leu Arg Lys Phe
        850                 855                 860
Pro Asn Gln Phe Lys Pro Phe Ile Asp Val Phe Gly Cys Gln Leu Pro
865                 870                 875                 880
Leu Thr Val Glu Ala Pro Tyr Ser Tyr Asn Gly Thr Leu Phe Arg Leu
            885                 890                 895
Ser Phe Arg Thr Gln Gln Glu Ala Lys Val Ser Glu Val Ser Ser Thr
            900                 905                 910
Cys Tyr Asn Thr Ala Asp Ile Tyr Ser Leu Val Asp Glu Phe Ser Leu
            915                 920                 925
Cys Gly His Arg Leu Ile Ile Phe Thr Gln Ser Val Lys Ser Met Tyr
        930                 935                 940
Leu Lys Tyr Leu Lys Ile Glu Glu Thr Asn Pro Ser Leu Ala Gln Asp
945                 950                 955                 960
Thr Val Ile Ile Lys Lys Lys Ser Cys Ser Ser Lys Ala Leu Asn Thr
            965                 970                 975
Pro Val Leu Ser Val Leu Lys Glu Ala Ala Lys Leu Met Lys Thr Cys
            980                 985                 990
Ser Ser Ser Asn Lys Lys Leu Pro Ser Asp Glu Pro Lys Ser Ser Cys
        995                 1000                1005
Ile Leu Gln Ile Thr Val Glu Glu Phe His His Val Phe Arg Arg Ile
        1010                1015                1020
Ala Asp Leu Gln Ser Pro Leu Phe Arg Gly Pro Asp Asp Asp Pro Ala
1025                1030                1035                1040
Ala Leu Phe Glu Met Ala Lys Ser Gly Gln Ser Lys Lys Pro Ser Asp
            1045                1050                1055
Glu Leu Ser Gln Lys Thr Val Glu Cys Thr Thr Trp Leu Leu Cys Thr
            1060                1065                1070
Cys Met Asp Thr Gly Glu Ala Leu Lys Phe Ser Leu Ser Glu Ser Gly
            1075                1080                1085
Arg Arg Leu Gly Leu Val Pro Cys Gly Ala Val Gly Val Gln Leu Ser
            1090                1095                1100
Glu Ile Gln Asp Gln Lys Trp Thr Val Lys Pro His Ile Gly Glu Val
1105                1110                1115                1120
Phe Cys Tyr Leu Pro Leu Arg Ile Lys Thr Gly Leu Pro Val His Ile
            1125                1130                1135
Asn Gly Cys Phe Ala Val Thr Ser Asn Arg Lys Glu Ile Trp Lys Thr
            1140                1145                1150
Asp Thr Lys Gly Arg Trp Asn Thr Thr Phe Met Arg His Val Ile Val
            1155                1160                1165
Lys Ala Tyr Leu Gln Val Leu Ser Val Leu Arg Asp Leu Ala Thr Ser
    1170                1175                1180
Gly Glu Leu Met Asp Tyr Thr Tyr Tyr Ala Val Trp Pro Asp Pro Asp
1185                1190                1195                1200
Leu Val His Asp Asp Phe Ser Val Ile Cys Gln Gly Phe Tyr Glu Asp
            1205                1210                1215
Ile Ala His Gly Lys Gly Lys Glu Leu Thr Lys Val Phe Ser Asp Gly
            1220                1225                1230
Ser Thr Trp Val Ser Met Lys Asn Val Arg Phe Leu Asp Asp Ser Ile
            1235                1240                1245
Leu Lys Arg Arg Asp Val Gly Ser Ala Ala Phe Lys Ile Phe Leu Lys
    1250                1255                1260
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Tyr Leu Lys Lys Thr Gly Ser Lys Asn Leu Cys Ala Val Glu Leu Pro
1265                1270                1275                1280
Ser Ser Val Lys Leu Gly Phe Glu Glu Ala Gly Cys Lys Gln Ile Leu
               1285                1290                1295
Leu Glu Asn Thr Phe Ser Glu Lys Gln Phe Phe Ser Glu Val Phe Phe
               1300                1305                1310
Pro Asn Ile Gln Glu Ile Glu Ala Glu Leu Arg Asp Pro Leu Met Ile
           1315                1320                1325
Phe Val Leu Asn Glu Lys Val Asp Glu Phe Ser Gly Val Leu Arg Val
           1330                1335                1340
Thr Pro Cys Ile Pro Cys Ser Leu Glu Gly His Pro Leu Val Leu Pro
1345                1350                1355                1360
Ser Arg Leu Ile His Pro Glu Gly Arg Val Ala Lys Leu Phe Asp Ile
               1365                1370                1375
Lys Asp Gly Arg Phe Pro Tyr Gly Ser Thr Gln Asp Tyr Leu Asn Pro
               1380                1385                1390
Ile Ile Leu Ile Lys Leu Val Gln Leu Gly Lys Ala Lys Asp Asp Ile
               1395                1400                1405
Leu Trp Asp Asp Met Leu Glu Arg Ala Val Ser Val Ala Glu Ile Asn
           1410                1415                1420
Lys Ser Asp His Val Ala Ala Cys Leu Arg Ser Ser Ile Leu Leu Ser
1425                1430                1435                1440
Leu Ile Asp Glu Lys Leu Lys Ile Arg Asp Pro Arg Ala Lys Asp Phe
               1445                1450                1455
Ala Ala Lys Tyr Gln Thr Ile Arg Phe Leu Pro Phe Leu Thr Lys Pro
           1460                1465                1470
Ala Gly Phe Ser Leu Asp Trp Lys Gly Asn Ser Phe Lys Pro Glu Thr
           1475                1480                1485
Met Phe Ala Ala Thr Asp Leu Tyr Thr Ala Glu His Gln Asp Ile Val
           1490                1495                1500
Cys Leu Leu Gln Pro Ile Leu Asn Glu Asn Ser His Ser Phe Arg Gly
1505                1510                1515                1520
Cys Gly Ser Val Ser Leu Ala Val Lys Glu Phe Leu Gly Leu Leu Lys
               1525                1530                1535
Lys Pro Thr Val Asp Leu Val Ile Asn Gln Leu Lys Glu Val Ala Lys
           1540                1545                1550
Ser Val Asp Asp Gly Ile Thr Leu Tyr Gln Glu Asn Ile Thr Asn Ala
           1555                1560                1565
Cys Tyr Lys Tyr Leu His Glu Ala Leu Met Gln Asn Glu Ile Thr Lys
1570                1575                1580
Met Ser Ile Ile Asp Lys Leu Lys Pro Phe Ser Phe Ile Leu Val Glu
1585                1590                1595                1600
Asn Ala Tyr Val Asp Ser Glu Lys Val Ser Phe His Leu Asn Phe Glu
               1605                1610                1615
Ala Ala Pro Tyr Leu Tyr Gln Leu Pro Asn Lys Tyr Lys Asn Asn Phe
           1620                1625                1630
Arg Glu Leu Phe Glu Thr Val Gly Val Arg Gln Ser Cys Thr Val Glu
           1635                1640                1645
Asp Phe Ala Leu Val Leu Glu Ser Ile Asp Gln Glu Arg Gly Thr Lys
           1650                1655                1660
Gln Ile Thr Glu Glu Asn Phe Gln Leu Cys Arg Arg Ile Ile Ser Glu
1665                1670                1675                1680
Gly Ile Trp Ser Leu Ile Arg Glu Lys Lys Gln Glu Phe Cys Glu Lys
               1685                1690                1695
Asn Tyr Gly Lys Ile Leu Leu Pro Asp Thr Asn Leu Met Leu Leu Pro
           1700                1705                1710
Ala Lys Ser Leu Cys Tyr Asn Asp Cys Pro Trp Ile Lys Val Lys Asp
           1715                1720                1725
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Thr Thr Val Lys Tyr Cys His Ala Asp Ile Pro Arg Glu Val Ala Val
    1730              1735              1740
Lys Leu Gly Ala Val Pro Lys Arg His Lys Ala Leu Glu Arg Tyr Ala
1745              1750              1755              1760
Ser Asn Val Cys Phe Thr Thr Leu Gly Thr Glu Phe Gly Gln Lys Glu
            1765              1770              1775
Lys Leu Thr Ser Arg Ile Lys Ser Ile Leu Asn Ala Tyr Pro Ser Glu
            1780              1785              1790
Lys Glu Met Leu Lys Glu Leu Leu Gln Asn Ala Asp Asp Ala Lys Ala
            1795              1800              1805
Thr Glu Ile Cys Phe Val Phe Asp Pro Arg Gln His Pro Val Asp Arg
            1810              1815              1820
Ile Phe Asp Asp Lys Trp Ala Pro Leu Gln Gly Pro Ala Leu Cys Val
 1825              1830              1835              1840
Tyr Asn Asn Gln Pro Phe Thr Glu Asp Asp Val Arg Gly Ile Gln Asn
            1845              1850              1855
Leu Gly Lys Gly Thr Lys Glu Gly Asn Pro Tyr Lys Thr Gly Gln Tyr
            1860              1865              1870
Gly Ile Gly Phe Asn Ser Val Tyr His Ile Thr Asp Cys Pro Ser Phe
            1875              1880              1885
Ile Ser Gly Asn Asp Ile Leu Cys Ile Phe Asp Pro His Ala Arg Tyr
            1890              1895              1900
Ala Pro Gly Ala Thr Ser Ile Ser Pro Gly Arg Met Phe Arg Asp Leu
1905              1910              1915              1920
Asp Ala Asp Phe Arg Thr Gln Phe Ser Asp Val Leu Asp Leu Tyr Leu
            1925              1930              1935
Gly Thr His Phe Lys Leu Asp Asn Cys Thr Met Phe Arg Phe Pro Leu
            1940              1945              1950
Arg Asn Ala Glu Met Ala Lys Val Ser Glu Ile Ser Ser Val Pro Ala
            1955              1960              1965
Ser Asp Arg Met Val Gln Asn Leu Leu Asp Lys Leu Arg Ser Asp Gly
            1970              1975              1980
Ala Glu Leu Leu Met Phe Leu Asn His Met Glu Lys Ile Ser Ile Cys
1985              1990              1995              2000
Glu Ile Asp Lys Ser Thr Gly Ala Leu Asn Val Leu Tyr Ser Val Lys
            2005              2010              2015
Gly Lys Ile Thr Asp Gly Asp Arg Leu Lys Arg Lys Gln Phe His Ala
            2020              2025              2030
Ser Val Ile Asp Ser Val Thr Lys Lys Arg Gln Leu Lys Asp Ile Pro
    2035              2040              2045
Val Gln Gln Ile Thr Tyr Thr Met Asp Thr Glu Asp Ser Glu Gly Asn
    2050              2055              2060
Leu Thr Thr Trp Leu Ile Cys Asn Arg Ser Gly Phe Ser Ser Met Glu
2065              2070              2075              2080
Lys Val Ser Lys Ser Val Ile Ser Ala His Lys Asn Gln Asp Ile Thr
            2085              2090              2095
Leu Phe Pro Arg Gly Gly Val Ala Ala Cys Ile Thr His Asn Tyr Lys
            2100              2105              2110
Lys Pro His Arg Ala Phe Cys Phe Leu Pro Leu Ser Leu Glu Thr Gly
    2115              2120              2125
Leu Pro Phe His Val Asn Gly His Phe Ala Leu Asp Ser Ala Arg Arg
    2130              2135              2140
Asn Leu Trp Arg Asp Asp Asn Gly Val Gly Val Arg Ser Asp Trp Asn
2145              2150              2155              2160
Asn Ser Leu Met Thr Ala Leu Ile Ala Pro Ala Tyr Val Glu Leu Leu
            2165              2170              2175
Ile Gln Leu Lys Lys Arg Tyr Phe Pro Gly Ser Asp Pro Thr Leu Ser
        2180              2185              2190
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Val Leu Gln Asn Thr Pro Ile His Val Val Lys Asp Thr Leu Lys Lys
        2195                2200                2205
Phe Leu Ser Phe Phe Pro Val Asn Arg Leu Asp Leu Gln Pro Asp Leu
        2210                2215                2220
Tyr Cys Leu Val Lys Ala Leu Tyr Asn Cys Ile His Glu Asp Met Lys
2225                2230                2235                2240
Arg Leu Leu Pro Val Val Arg Ala Pro Asn Ile Asp Gly Ser Asp Leu
        2245                2250                2255
His Ser Ala Val Ile Ile Thr Trp Ile Asn Met Ser Thr Ser Asn Lys
        2260                2265                2270
Thr Arg Pro Phe Phe Asp Asn Leu Leu Gln Asp Glu Leu Gln His Leu
        2275                2280                2285
Lys Asn Ala Asp Tyr Asn Ile Thr Thr Arg Lys Thr Val Ala Glu Asn
        2290                2295                2300
Val Tyr Arg Leu Lys His Leu Leu Leu Glu Ile Gly Phe Asn Leu Val
2305                2310                2315                2320
Tyr Asn Cys Asp Glu Thr Ala Asn Leu Tyr His Cys Leu Ile Asp Ala
        2325                2330                2335
Asp Ile Pro Val Ser Tyr Val Thr Pro Ala Asp Ile Arg Ser Phe Leu
        2340                2345                2350
Met Thr Phe Ser Ser Pro Asp Thr Asn Cys His Ile Gly Lys Leu Pro
        2355                2360                2365
Cys Arg Leu Gln Gln Thr Asn Leu Lys Leu Phe His Ser Leu Lys Leu
        2370                2375                2380
Leu Val Asp Tyr Cys Phe Lys Asp Ala Glu Glu Asn Glu Ile Glu Val
2385                2390                2395                2400
Glu Gly Leu Pro Leu Leu Ile Thr Leu Asp Ser Val Leu Gln Thr Phe
        2405                2410                2415
Asp Ala Lys Arg Pro Lys Phe Leu Thr Thr Tyr His Glu Leu Ile Pro
        2420                2425                2430
Ser Arg Lys Asp Leu Phe Met Asn Thr Leu Tyr Leu Lys Tyr Ser Asn
        2435                2440                2445
Ile Leu Leu Asn Cys Lys Val Ala Lys Val Phe Asp Ile Ser Ser Phe
        2450                2455                2460
Ala Asp Leu Leu Ser Ser Val Leu Pro Arg Glu Tyr Lys Thr Lys Ser
2465                2470                2475                2480
Cys Thr Lys Trp Lys Asp Asn Phe Ala Ser Glu Ser Trp Leu Lys Asn
        2485                2490                2495
Ala Trp His Phe Ile Ser Glu Ser Val Ser Val Lys Glu Asp Gln Glu
        2500                2505                2510
Glu Thr Lys Pro Thr Phe Asp Ile Val Val Asp Thr Leu Lys Asp Trp
        2515                2520                2525
Ala Leu Leu Pro Gly Thr Lys Phe Thr Val Ser Ala Asn Gln Leu Val
        2530                2535                2540
Val Pro Glu Gly Asp Val Leu Leu Pro Leu Ser Leu Met His Ile Ala
2545                2550                2555                2560
Val Phe Pro Asn Ala Gln Ser Asp Lys Val Phe His Ala Leu Met Lys
        2565                2570                2575
Ala Gly Cys Ile Gln Leu Ala Leu Asn Lys Ile Cys Ser Lys Asp Ser
        2580                2585                2590
Ala Phe Val Pro Leu Leu Ser Cys His Thr Ala Asn Ile Glu Ser Pro
        2595                2600                2605
Thr Ser Ile Leu Lys Ala Leu His Tyr Met Val Gln Thr Ser Thr Phe
        2610                2615                2620
Arg Ala Glu Lys Leu Val Glu Asn Asp Phe Glu Ala Leu Leu Met Tyr
2625                2630                2635                2640
Phe Asn Cys Asn Leu Asn His Leu Met Ser Gln Asp Asp Ile Lys Ile
        2645                2650                2655
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Leu Lys Ser Leu Pro Cys Tyr Lys Ser Ile Ser Gly Arg Tyr Val Ser
            2660                2665                2670
Ile Gly Lys Phe Gly Thr Cys Tyr Val Leu Thr Lys Ser Ile Pro Ser
            2675                2680                2685
Ala Glu Val Glu Lys Trp Thr Gln Ser Ser Ser Ser Ala Phe Leu Glu
        2690                2695                2700
Glu Lys Ile His Leu Lys Glu Leu Tyr Glu Val Ile Gly Cys Val Pro
2705                2710                2715                2720
Val Asp Asp Leu Glu Val Tyr Leu Lys His Leu Leu Pro Lys Ile Glu
            2725                2730                2735
Asn Leu Ser Tyr Asp Ala Lys Leu Glu His Leu Ile Tyr Leu Lys Asn
            2740                2745                2750
Arg Leu Ser Ser Ala Glu Glu Leu Ser Glu Ile Lys Glu Gln Leu Phe
            2755                2760                2765
Glu Lys Leu Glu Ser Leu Leu Ile Ile His Asp Ala Asn Ser Arg Leu
        2770                2775                2780
Lys Gln Ala Lys His Phe Tyr Asp Arg Thr Val Arg Val Phe Glu Val
2785                2790                2795                2800
Met Leu Pro Glu Lys Leu Phe Ile Pro Asn Asp Phe Phe Lys Lys Leu
            2805                2810                2815
Glu Gln Leu Ile Lys Pro Lys Asn His Val Thr Phe Met Thr Ser Trp
            2820                2825                2830
Val Glu Phe Leu Arg Asn Ile Gly Leu Lys Tyr Ile Leu Ser Gln Gln
            2835                2840                2845
Gln Leu Leu Gln Phe Ala Lys Glu Ile Ser Val Arg Ala Asn Thr Glu
        2850                2855                2860
Asn Trp Ser Lys Glu Thr Leu Gln Asn Thr Val Asp Ile Leu Leu His
2865                2870                2875                2880
His Ile Phe Gln Glu Arg Met Asp Leu Leu Ser Gly Asn Phe Leu Lys
            2885                2890                2895
Glu Leu Ser Leu Ile Pro Phe Leu Cys Pro Glu Arg Ala Pro Ala Glu
        2900                2905                2910
Phe Ile Arg Phe His Pro Gln Tyr Gln Glu Val Asn Gly Thr Leu Pro
        2915                2920                2925
Leu Ile Lys Phe Asn Gly Ala Gln Val Asn Pro Lys Phe Lys Gln Cys
        2930                2935                2940
Asp Val Leu Gln Leu Leu Trp Thr Ser Cys Pro Ile Leu Pro Glu Lys
2945                2950                2955                2960
Ala Thr Pro Leu Ser Ile Lys Glu Gln Glu Gly Ser Asp Leu Gly Pro
        2965                2970                2975
Gln Glu Gln Leu Glu Gln Val Leu Asn Met Leu Asn Val Asn Leu Asp
        2980                2985                2990
Pro Pro Leu Asp Lys Val Ile Asn Asn Cys Arg Asn Ile Cys Asn Ile
        2995                3000                3005
Thr Thr Leu Asp Glu Glu Met Val Lys Thr Arg Ala Lys Val Leu Arg
    3010                3015                3020
Ser Ile Tyr Glu Phe Leu Ser Ala Glu Lys Arg Glu Phe Arg Phe Gln
3025                3030                3035                3040
Leu Arg Gly Val Ala Phe Val Met Val Glu Asp Gly Trp Lys Leu Leu
            3045                3050                3055
Lys Pro Glu Glu Val Val Ile Asn Leu Glu Tyr Glu Ser Asp Phe Lys
            3060                3065                3070
Pro Tyr Leu Tyr Lys Leu Pro Leu Glu Leu Gly Thr Phe His Gln Leu
        3075                3080                3085
Phe Lys His Leu Gly Thr Glu Asp Ile Ile Ser Thr Lys Gln Tyr Val
        3090                3095                3100
Glu Val Leu Ser Arg Ile Phe Lys Asn Ser Glu Gly Lys Gln Leu Asp
3105                3110                3115                3120
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Pro Asn Glu Met Arg Thr Val Lys Arg Val Val Ser Gly Leu Phe Arg
            3125   3130   3135

Ser Leu Gln Asn Asp Ser Val Lys Val Arg Ser Asp Leu Glu Asn Val
            3140   3145   3150

Arg Asp Leu Ala Leu Tyr Leu Pro Ser Gln Asp Gly Arg Leu Val Lys
            3155   3160   3165

Ser Ser Ile Leu Val Phe Asp Asp Ala Pro His Tyr Lys Ser Arg Ile
            3170   3175   3180

Gln Gly Asn Ile Gly Val Gln Met Leu Val Asp Leu Ser Gln Cys Tyr
3185   3190   3195   3200

Leu Gly Lys Asp His Gly Phe His Thr Lys Leu Ile Met Leu Phe Pro
            3205   3210   3215

Gln Lys Leu Arg Pro Arg Leu Leu Ser Ser Ile Leu Glu Glu Gln Leu
            3220   3225   3230

Asp Glu Glu Thr Pro Lys Val Cys Gln Phe Gly Ala Leu Cys Ser Leu
            3235   3240   3245

Gln Gly Arg Leu Gln Leu Leu Leu Ser Ser Glu Gln Phe Ile Thr Gly
            3250   3255   3260

Leu Ile Arg Ile Met Lys His Glu Asn Asp Asn Ala Phe Leu Ala Asn
3265   3270   3275   3280

Glu Glu Lys Ala Ile Arg Leu Cys Lys Ala Leu Arg Glu Gly Leu Lys
            3285   3290   3295

Val Ser Cys Phe Glu Lys Leu Gln Thr Thr Leu Arg Val Lys Gly Phe
            3300   3305   3310

Asn Pro Ile Pro His Ser Arg Ser Glu Thr Phe Ala Phe Leu Lys Arg
            3315   3320   3325

Phe Gly Asn Ala Val Ile Leu Leu Tyr Ile Gln His Ser Asp Ser Lys
            3330   3335   3340

Asp Ile Asn Phe Leu Leu Ala Leu Ala Met Thr Leu Lys Ser Ala Thr
3345   3350   ·3355   3360

Asp Asn Leu Ile Ser Asp Thr Ser Tyr Leu Ile Ala Met Leu Gly Cys
            3365   3370   3375

Asn Asp Ile Tyr Arg Ile Gly Glu Lys Leu Asp Ser Leu Gly Val Lys
            3380   3385   3390

Tyr Asp Ser Ser Glu Pro Ser Lys Leu Glu Leu Pro Met Pro Gly Thr
            3395   3400   3405

Pro Ile Pro Ala Glu Ile His Tyr Thr Leu Leu Met Asp Pro Met Asn
            3410   3415   3420

Val Phe Tyr Pro Gly Glu Tyr Val Gly Tyr Leu Val Asp Ala Glu Gly
3425   3430   3435   3440

Gly Asp Ile Tyr Gly Ser Tyr Gln Pro Thr Tyr Thr Tyr Ala Ile Ile
            3445   3450   3455

Val Gln Glu Val Glu Arg Glu Asp Ala Asp Asn Ser Ser Phe Leu Gly
            3460   3465   3470

Lys Ile Tyr Gln Ile Asp Ile Gly Tyr Ser Glu Tyr Lys Ile Val Ser
            3475   3480   3485

Ser Leu Asp Leu Tyr Lys Phe Ser Arg Pro Glu Glu Ser Ser Gln Ser
            3490   3495   3500

Arg Asp Ser Ala Pro Ser Thr Pro Thr Ser Pro Thr Glu Phe Leu Thr
3505   3510   3515   .   3520

Pro Gly Leu Arg Ser Ile Pro Pro Leu Phe Ser Gly Arg Glu Ser His
            3525   ·   3530   3535

Lys Thr Ser Ser Lys His Gln Ser Pro Lys Lys Leu Lys Val Asn Ser
            3540   3545   3550

Leu Pro Glu Ile Leu Lys Glu Val Thr Ser Val Val Glu Gln Ala Trp
            3555   3560   3565

Lys Leu Pro Glu Ser Glu Arg Lys Lys Ile Ile Arg Arg Leu Tyr Leu
            3570   3575 ·   3580

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Lys Trp His Pro Asp Lys Asn Pro Glu Asn His Asp Ile Ala Asn Glu
3585                3590                3595                3600
Val Phe Lys His Leu Gln Asn Glu Ile Asn Arg Leu Glu Lys Gln Ala
                3605                3610                3615
Phe Leu Asp Gln Asn Ala Asp Arg Ala Ser Arg Arg Thr Phe Ser Thr
                3620                3625                3630
Ser Ala Ser Arg Phe Gln Ser Asp Lys Tyr Ser Phe Gln Arg Phe Tyr
            3635                3640                3645
Thr Ser Trp Asn Gln Glu Ala Thr Ser His Lys Ser Glu Arg Gln Gln
            3650                3655                3660
Gln Asn Lys Glu Lys Cys Pro Pro Ser Ala Gly Gln Thr Tyr Ser Gln
3665                3670                3675                3680
Arg Phe Phe Val Pro Pro Thr Phe Lys Ser Val Gly Asn Pro Val Glu
                3685                3690                3695
Ala Arg Arg Trp Leu Arg Gln Ala Arg Ala Asn Phe Ser Ala Ala Arg
            3700                3705                3710
Asn Asp Leu His Lys Asn Ala Asn Glu Trp Val Cys Phe Lys Cys Tyr
            3715                3720                3725
Leu Ser Thr Lys Leu Ala Leu Ile Ala Ala Asp Tyr Ala Val Arg Gly
            3730                3735                3740
Lys Ser Asp Lys Asp Val Lys Pro Thr Ala Leu Ala Gln Lys Ile Glu
3745                3750                3755                3760
Glu Tyr Ser Gln Gln Leu Glu Gly Leu Thr Asn Asp Val His Thr Leu
                3765                3770                3775
Glu Ala Tyr Gly Val Asp Ser Leu Lys Thr Arg Tyr Pro Asp Leu Leu
            3780                3785                3790
Pro Phe Pro Gln Ile Pro Asn Asp Arg Phe Thr Ser Glu Val Ala Met
            3795                3800                3805
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Met Gln Gln Lys Val
3825
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tcggaagatt tgactttatt tgatgagatg ccacttatcc ctagaactct actgaatgag 180
gaccagacgt gtgtggaact catcagactc aggatcccat cagtagtcat tttagatgat 240
gaaactgaag ctcagcttcc agaattctta gcagatattg tacaaaaact tggagggatt 300
gtcctgaaaa gactagatac ctctattcag catccacttg ttaaaaaata cattcattcc 360
ccactcccga gtgctatttt gcagataatg gagaagatac tctacagaa gttgtgtaat 420
aaatagcatc attacttcca acccacaaag atgctctaag gaagtttttg gccagcttaa 480
ctgataccag tgaaaagag aaaagaataa ttcaagaatt gacaatattc aaaagaatta 540
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Glu Thr Glu Ala Gln Leu Pro Glu Phe Leu Ala Asp Ile Val Gln Lys
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Thr Asp Ile Pro Ile Ile Met Ser Arg Glu Phe Met Ile Met Phe Asp
            820                 825                 830
Pro Asn Ile Asn His Ile Ser Lys His Ile Lys Asp Arg Ser Asn Pro
            835                 840                 845
Gly Ile Lys Ile Asn Trp Ser Lys Gln Gln Lys Arg Leu Arg Lys Phe
850                 855                 860
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Pro Asn Gln Phe Lys Pro Phe Ile Asp Val Phe Gly Cys Gln Leu Pro
865   870   875   880
Leu Ala Val Glu Ala Pro Tyr Ser Tyr Asn Gly Thr Leu Phe Arg Leu
                885   890   895
Ser Phe Arg Thr Gln Gln Glu Ala Lys Val Ser Glu Val Ser Ser Thr
            900   905   910
Cys Tyr Asn Thr Ala Asp Ile Tyr Ser Leu Val Asp Glu Phe Ser Leu
            915   920   925
Cys Gly His Arg Leu Ile Ile Phe Thr Gln Ser Val Asn Ser Met Tyr
            930   935   940
Leu Lys Tyr Leu Lys Ile Glu Glu Thr Asn Pro Ser Leu Ala Gln Asp
945   950   955   960
Thr Ile Ile Ile Lys Lys Lys Val Cys Pro Ser Lys Ala Leu Asn Ala
            965   970   975
Pro Val Leu Ser Val Leu Lys Glu Ala Ala Lys Leu Met Lys Thr Cys
            980   985   990
Ser Ser Ser Asn Lys Lys Leu Pro Thr Asp Val Pro Lys Ser Ser Cys
            995   1000   1005
Ile Leu Gln Ile Thr Val Glu Glu Phe His His Val Phe Arg Arg Ile
        1010   1015   1020
Ala Asp Leu Gln Ser Pro Leu Phe Arg Gly Pro Asp Asp Asp Pro Ala
1025   1030   1035   1040
Thr Leu Phe Glu Met Ala Lys Ser Gly Gln Ser Lys Lys Pro Ser Asp
            1045   1050   1055
Glu Leu Pro Gln Lys Thr Val Asp Cys Thr Thr Trp Leu Ile Cys Thr
            1060   1065   1070
Cys Met Asp Thr Gly Glu Ala Leu Lys Phe Ser Leu Asn Glu Ser Gly
            1075   1080   1085
Arg Arg Leu Gly Leu Val Pro Cys Gly Ala Val Gly Val Leu Leu His
        1090   1095   1100
Glu Thr Gln Glu Gln Lys Trp Thr Val Lys Pro His Ile Gly Glu Val
1105   1110   1115   1120
Phe Cys Tyr Leu Pro Leu Arg Ile Lys Thr Gly Leu Pro Ile His Ile
            1125   1130   1135
Asn Gly Cys Phe Ala Val Thr Ser Asn Arg Lys Glu Ile Trp Lys Thr
            1140   1145   1150
Asp Thr Lys Gly Arg Trp Asn Thr Thr Phe Met Arg His Val Ile Val
            1155   1160   1165
Lys Ala Tyr Leu Gln Ala Leu Ser Val Leu Arg Asp Leu Ala Ile Gly
        1170   1175   1180
Gly Glu Leu Thr Asp Tyr Thr Tyr Tyr Ala Val Trp Pro Asp Pro Asp
1185   1190   1195   1200
Leu Val His Asp Asp Phe Ser Val Ile Cys Lys Gly Phe Tyr Glu Asp
            1205   1210   1215
Ile Ala His Gly Lys Gly Lys Glu Leu Thr Arg Val Phe Ser Asp Gly
            1220   1225   1230
Ser Met Trp Val Ser Met Lys Asn Val Arg Phe Leu Asp Asp Ser Ile
            1235   1240   1245
Leu Gln Arg Lys Asp Val Gly Ser Ala Ala Phe Lys Ile Phe Leu Lys
        1250   1255   1260
Tyr Leu Lys Lys Thr Gly Ser Lys Asn Leu Cys Ala Val Glu Leu Pro
1265   1270   1275   1280
Ser Ser Val Lys Ala Gly Phe Glu Glu Ala Gly Cys Lys Gln Ile Leu
            1285   1290   1295
Leu Glu Asn Thr Phe Ser Glu Lys Gln Phe Phe Ser Glu Val Phe Phe
        1300   1305   1310
Pro Asn Ile Gln Glu Ile Glu Ala Glu Leu Arg Asp Pro Leu Met Asn
        1315   1320   1325

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Phe Val Leu Asn Glu Lys Leu Asp Glu Phe Ser Gly Ile Leu Arg Val
    1330              1335              1340
Thr Pro Cys Val Pro Cys Ser Leu Glu Gly His Pro Leu Val Leu Pro
1345              1350              1355              1360
Ser Arg Leu Ile His Pro Glu Gly Arg Val Ala Lys Leu Phe Asp Thr
              1365              1370              1375
Lys Asp Gly Arg Phe Pro Tyr Gly Ser Thr Gln Asp Tyr Leu Asn Pro
              1380              1385              1390
Ile Ile Leu Ile Lys Leu Val Gln Leu Gly Met Ala Lys Asp Asp Ile
              1395              1400              1405
Leu Trp Asp Asp Met Leu Glu Arg Ala Glu Ser Val Ala Glu Ile Asn
              1410              1415              1420
Lys Ser Asp His Ala Ala Ala Cys Leu Arg Ser Ser Ile Leu Leu Ser
1425              1430              1435              1440
Leu Ile Asp Glu Lys Leu Lys Ile Lys Asp Pro Arg Ala Lys Asp Phe
              1445              1450              1455
Ala Ala Lys Tyr Gln Thr Ile Pro Phe Leu Pro Phe Leu Thr Lys Pro
              1460              1465              1470
Ala Gly Phe Ser Leu Glu Trp Lys Gly Asn Ser Phe Lys Pro Glu Thr
              1475              1480              1485
Met Phe Ala Ala Thr Asp Ile Tyr Thr Ala Glu Tyr Gln Asp Ile Val
              1490              1495              1500
Cys Leu Leu Gln Pro Ile Leu Asn Glu Asn Ser His Ser Phe Arg Gly
1505              1510              1515              1520
Cys Gly Ser Val Ser Leu Ala Val Lys Glu Phe Leu Gly Leu Leu Lys
              1525              1530              1535
Lys Pro Thr Val Asp Leu Val Ile Asn Gln Leu Lys Gln Val Ala Lys
              1540              1545              1550
Ser Val Asp Asp Gly Ile Thr Leu Tyr Gln Glu Asn Ile Thr Asn Ala
              1555              1560              1565
Cys Tyr Lys Tyr Leu His Glu Ala Val Leu Gln Asn Glu Met Ala Lys
              1570              1575              1580
Ala Thr Ile Ile Glu Lys Leu Lys Pro Phe Cys Phe Ile Leu Val Glu
1585              1590              1595              1600
Asn Val Tyr Val Glu Ser Glu Lys Val Ser Phe His Leu Asn Phe Glu
              1605              1610              1615
Ala Ala Pro Tyr Leu Tyr Gln Leu Pro Asn Lys Tyr Lys Asn Asn Phe
              1620              1625              1630
Arg Glu Leu Phe Glu Ser Val Gly Val Arg Gln Ser Phe Thr Val Glu
              1635              1640              1645
Asp Phe Ala Leu Val Leu Glu Ser Ile Asp Gln Glu Arg Gly Lys Lys
              1650              1655              1660
Gln Ile Thr Glu Glu Asn Phe Gln Leu Cys Arg Arg Ile Ile Ser Glu
1665              1670              1675              1680
Gly Ile Trp Ser Leu Ile Arg Glu Lys Arg Gln Glu Phe Cys Glu Lys
              1685              1690              1695
Asn Tyr Gly Lys Ile Leu Leu Pro Asp Thr Asn Leu Leu Leu Leu Pro
              1700              1705              1710
Ala Lys Ser Leu Cys Tyr Asn Asp Cys Pro Trp Ile Lys Val Lys Asp
              1715              1720              1725
Ser Thr Val Lys Tyr Cys His Ala Asp Ile Pro Arg Glu Val Ala Val
    1730              1735              1740
Lys Leu Gly Ala Ile Pro Lys Arg His Lys Ala Leu Glu Arg Tyr Ala
1745              1750              1755              1760
Ser Asn Ile Cys Phe Thr Ala Leu Gly Thr Glu Phe Gly Gln Lys Glu
              1765              1770              1775
Lys Leu Thr Ser Arg Ile Lys Ser Ile Leu Asn Ala Tyr Pro Ser Glu
              1780              1785              1790
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Lys Glu Met Leu Lys Glu Leu Leu Gln Asn Ala Asp Asp Ala Lys Ala
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Thr Glu Ile Cys Phe Val Phe Asp Pro Arg Gln His Pro Val Asp Arg
         1810                1815                1820
Ile Phe Asp Asp Lys Trp Ala Pro Leu Gln Gly Pro Ala Leu Cys Val
1825                1830                1835                1840
Tyr Asn Asn Gln Pro Phe Thr Glu Asp Asp Val Arg Gly Ile Gln Asn
              1845                1850                1855
Leu Gly Lys Gly Thr Lys Glu Gly Asn Pro Cys Lys Thr Gly His Tyr
              1860                1865                1870
Gly Ile Gly Phe Asn Ser Val Tyr His Ile Thr Asp Cys Pro Ser Phe
              1875                1880                1885
Ile Ser Gly Asn Asp Ile Leu Gly Ile Phe Asp Pro His Ala Arg Tyr
         1890                1895                1900
Ala Pro Gly Ala Thr Ser Val Ser Pro Gly Arg Met Phe Arg Asp Leu
1905                1910                1915                1920
Asp Ala Asp Phe Arg Thr Gln Phe Ser Asp Val Leu Asp Leu Tyr Leu
              1925                1930                1935
Gly Asn His Phe Lys Leu Asp Asn Cys Thr Met Phe Arg Phe Pro Leu
              1940                1945                1950
Arg Asn Ala Glu Met Ala Gln Val Ser Glu Ile Ser Ser Val Pro Ser
         1955                1960                1965
Ser Asp Arg Met Val Gln Asn Leu Leu Asp Lys Leu Arg Ser Asp Gly
         1970                1975                1980
Ala Glu Leu Leu Met Phe Leu Asn His Met Glu Lys Ile Ser Ile Cys
1985                1990                1995                2000
Glu Ile Asp Lys Ala Thr Gly Gly Leu Asn Val Leu Tyr Ser Val Lys
         2005                2010                2015
Gly Lys Ile Thr Asp Gly Asp Arg Leu Lys Arg Lys Gln Phe His Ala
         2020                2025                2030
Ser Val Ile Asp Ser Val Thr Lys Lys Arg Gln Leu Lys Asp Ile Pro
         2035                2040                2045
Val Gln Gln Ile Thr Tyr Thr Met Asp Thr Glu Asp Ser Glu Gly Asn
         2050                2055                2060
Leu Thr Thr Trp Leu Ile Cys Asn Arg Ser Gly Phe Ser Ser Met Glu
2065                2070                2075                2080
Lys Val Ser Lys Ser Val Ile Ser Ala His Lys Asn Gln Asp Ile Thr
         2085                2090                2095
Leu Phe Pro Arg Gly Gly Val Ala Ala Cys Ile Thr His Asn Tyr Lys
         2100                2105                2110
Lys Pro His Arg Ala Phe Cys Phe Leu Pro Leu Ser Leu Glu Thr Gly
         2115                2120                2125
Leu Pro Phe His Val Asn Gly His Phe Ala Leu Asp Ser Ala Arg Arg
         2130                2135                2140
Asn Leu Trp Arg Asp Asp Asn Gly Val Gly Val Arg Ser Asp Trp Asn
2145                2150                2155                2160
Asn Ser Leu Met Thr Ala Leu Ile Ala Pro Ala Tyr Val Glu Leu Leu
              2165                2170                2175
Ile Gln Leu Lys Lys Arg Tyr Phe Pro Gly Ser Asp Pro Thr Leu Ser
         2180                2185                2190
Val Leu Gln Asn Thr Pro Ile His Val Val Lys Asp Thr Leu Lys Lys
         2195                2200                2205
Phe Leu Ser Phe Phe Pro Val Asn Arg Leu Asp Leu Gln Pro Asp Leu
2210                2215                2220
Tyr Cys Leu Val Lys Ala Leu Tyr Ser Cys Ile His Glu Asp Met Lys
2225                2230                2235                2240
Arg Leu Leu Pro Val Val Arg Ala Pro Asn Ile Asp Gly Ser Asp Leu
              2245                2250                2255
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His Ser Ala Val Ile Ile Thr Trp Ile Asn Met Ser Thr Ser Asn Lys
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Thr Arg Pro Phe Phe Asp Asn Leu Leu Gln Asp Glu Leu Gln His Leu
          2275                2280                2285
Lys Asn Ala Asp Tyr Asn Ile Thr Thr Arg Lys Thr Val Ala Glu Asn
          2290                2295                2300
Val Tyr Arg Leu Lys His Leu Leu Leu Glu Ile Gly Phe Asn Leu Val
2305                2310                2315                2320
Tyr Asn Cys Asp Glu Thr Ala Asn Leu Tyr His Cys Leu Val Asp Ala
          2325                2330                2335
Asp Ile Pro Val Ser Tyr Val Thr Pro Ala Asp Val Arg Ser Phe Leu
          2340                2345                2350
Met Thr Phe Ser Ser Pro Asp Thr Asn Cys His Ile Gly Lys Leu Pro
          2355                2360                2365
Cys Arg Leu Gln Gln Thr Asn Leu Lys Leu Phe His Ser Leu Lys Leu
          2370                2375                2380
Leu Val Asp Tyr Cys Phe Lys Asp Ala Glu Glu Ser Glu Phe Glu Val
2385                2390                2395                2400
Glu Gly Leu Pro Leu Leu Ile Thr Leu Asp Ser Val Leu Gln Ile Phe
          2405                2410                2415
Asp Gly Lys Arg Pro Lys Phe Leu Thr Thr Tyr His Glu Leu Ile Pro
          2420                2425                2430
Ser Arg Lys Asp Leu Phe Met Asn Thr Leu Tyr Leu Lys Tyr Ser Ser
          2435                2440                2445
Val Leu Leu Asn Cys Lys Val Ala Lys Val Phe Asp Ile Ser Ser Phe
2450                2455                2460
Ala Asp Leu Leu Ser Ser Val Leu Pro Arg Glu Tyr Lys Thr Lys Asn
2465                2470                2475                2480
Cys Ala Lys Trp Lys Asp Asn Phe Ala Ser Glu Ser Trp Leu Lys Asn
          2485                2490                2495
Ala Trp His Phe Ile Ser Glu Ser Val Ser Val Thr Asp Asp Gln Glu
          2500                2505                2510
Glu Pro Lys Pro Ala Phe Asp Val Ile Val Asp Ile Leu Lys Asp Trp
          2515                2520                2525
Ala Leu Leu Pro Gly Thr Lys Phe Thr Val Ser Thr Ser Gln Leu Val
          2530                2535                2540
Val Pro Glu Gly Asp Val Leu Ile Pro Leu Ser Leu Met His Ile Ala
2545                2550                2555                2560
Val Phe Pro Asn Ala Gln Ser Asp Lys Val Phe His Ala Leu Met Lys
          2565                2570                2575
Ala Gly Cys Ile Gln Leu Ala Leu Asn Lys Ile Cys Ser Lys Asp Ser
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Ala Leu Val Pro Leu Leu Ser Cys His Thr Ala Asn Ile Asp Ser Pro
          2595                2600                2605
Ala Ser Ile Leu Lys Ala Val His Tyr Met Val Gln Thr Ser Thr Phe
          2610                2615                2620
Arg Thr Glu Lys Leu Met Glu Asn Asp Phe Glu Ala Leu Leu Met Tyr
2625                2630                2635                2640
Phe Asn Cys Asn Leu Ser His Leu Met Ser Gln Asp Asp Ile Lys Ile
          2645                2650                2655
Leu Lys Ser Leu Pro Cys Tyr Lys Ser Ile Ser Gly Arg Tyr Met Ser
          2660                2665                2670
Ile Ala Lys Phe Gly Thr Cys Tyr Val Leu Thr Lys Ser Ile Pro Ser
          2675                2680                2685
Ala Glu Val Glu Lys Trp Thr Gln Ser Ser Ser Ser Ala Phe Leu Glu
          2690                2695                2700
Glu Lys Val His Leu Lys Glu Leu Tyr Glu Val Leu Gly Cys Val Pro
2705                2710                2715                2720
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Val Asp Asp Leu Glu Val Tyr Leu Lys His Leu Leu Pro Lys Ile Glu
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Asn Leu Ser Tyr Asp Ala Lys Leu Glu His Leu Ile Tyr Leu Lys Asn
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Arg Leu Ala Ser Ile Glu Glu Pro Ser Glu Ile Lys Glu Gln Leu Phe
              2755   2760   2765
Glu Lys Leu Glu Ser Leu Leu Ile Ile His Asp Ala Asn Asn Arg Leu
              2770   2775   2780
Lys Gln Ala Lys His Phe Tyr Asp Arg Thr Val Arg Val Phe Glu Val
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Met Leu Pro Glu Lys Leu Phe Ile Pro Lys Glu Phe Phe Lys Lys Leu
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Glu Gln Val Ile Lys Pro Lys Asn Gln Ala Ala Phe Met Thr Ser Trp
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Val Glu Phe Leu Arg Asn Ile Gly Leu Lys Tyr Ala Leu Ser Gln Gln
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Gln Leu Leu Gln Phe Ala Lys Glu Ile Ser Val Arg Ala Asn Thr Glu
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Asn Trp Ser Lys Glu Thr Leu Gln Ser Thr Val Asp Ile Leu Leu His
2865   2870   2875   2880
His Ile Phe Gln Glu Arg Met Asp Leu Leu Ser Gly Asn Phe Leu Lys
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Glu Leu Ser Leu Ile Pro Phe Leu Cys Pro Glu Arg Ala Pro Ala Glu
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Tyr Ile Arg Phe His Pro Gln Tyr Gln Glu Val Asn Gly Thr Leu Pro
              2915   2920   2925
Leu Ile Lys Phe Asn Gly Ala Gln Val Asn Pro Lys Phe Lys Gln Cys
              2930   2935   2940
Asp Val Leu Gln Leu Leu Trp Thr Ser Cys Pro Ile Leu Pro Glu Lys
2945   2950   2955   2960
Ala Thr Pro Leu Ser Ile Lys Glu Gln Glu Gly Ser Asp Leu Ala Pro
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Gln Glu Gln Leu Glu Gln Val Leu Asn Met Leu Asn Val Asn Leu Asp
              2980   2985   2990
Pro Pro Leu Asp Lys Val Ile Asn Asn Cys Arg Asn Ile Cys Asn Ile
              2995   3000   3005
Thr Thr Leu Asp Glu Glu Met Val Lys Thr Arg Ala Lys Val Leu Arg
              3010   3015   3020
Ser Ile Tyr Glu Phe Leu Ser Ala Glu Lys Arg Glu Phe Arg Phe Gln
3025   3030   3035   3040
Leu Arg Gly Val Ala Phe Val Met Val Glu Asp Gly Trp Lys Leu Leu
              3045   3050   3055
Lys Pro Glu Glu Val Val Ile Asn Leu Glu Tyr Glu Ala Asp Phe Lys
              3060   3065   3070
Pro Tyr Leu Tyr Lys Leu Pro Leu Glu Leu Gly Thr Phe His Gln Leu
              3075   3080   3085
Phe Lys His Leu Gly Thr Glu Asp Ile Ile Ser Thr Lys Gln Tyr Val
              3090   3095   3100
Glu Val Leu Ser Arg Ile Phe Lys Ser Ser Glu Gly Lys Gln Leu Asp
3105   3110   3115   3120
Pro Asn Glu Met Arg Thr Val Lys Arg Val Val Ser Gly Leu Phe Lys
              3125   3130   3135
Ser Leu Gln Asn Asp Ser Val Lys Val Arg Ser Asp Leu Glu Asn Ala
              3140   3145   3150
Arg Asp Leu Ala Leu Tyr Leu Pro Ser Gln Asp Gly Lys Leu Val Lys
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Ser Ser Ile Leu Val Phe Asp Asp Ala Pro His Tyr Lys Ser Arg Ile
              3170   3175   3180

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Gln Gly Asn Ile Gly Val Gln Met Leu Val Asp Leu Ser Gln Cys Tyr
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Leu Gly Lys Asp His Gly Phe His Thr Lys Leu Ile Met Leu Phe Pro
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Gln Lys Leu Arg Pro Arg Leu Leu Ser Ser Ile Leu Glu Glu Gln Leu
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Asp Glu Glu Thr Pro Lys Val Cys Gln Phe Gly Ala Leu Cys Ser Leu
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Gln Gly Arg Leu Gln Leu Leu Leu Ser Ser Glu Gln Phe Ile Thr Gly
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Leu Ile Arg Ile Met Lys His Glu Asn Asp Asn Ala Phe Leu Ala Asn
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Glu Glu Lys Ala Ile Arg Leu Cys Lys Ala Leu Arg Glu Gly Leu Lys
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Val Ser Cys Phe Glu Lys Leu Gln Thr Thr Leu Arg Val Lys Gly Phe
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Asn Pro Ile Pro His Ser Arg Ser Glu Thr Phe Ala Phe Leu Lys Arg
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Phe Gly Asn Ala Val Ile Leu Leu Tyr Ile Gln His Ser Asp Ser Lys
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Asp Ile Asn Phe Leu Leu Ala Leu Ala Met Thr Leu Lys Ser Ala Thr
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Asp Asn Leu Ile Ser Asp Thr Ser Tyr Leu Ile Ala Met Leu Gly Cys
            3365            3370            3375
Asn Asp Ile Tyr Arg Ile Ser Glu Lys Leu Asp Ser Leu Gly Val Lys
            3380            3385            3390
Tyr Asp Ser Ser Glu Pro Ser Lys Leu Glu Leu Pro Met Pro Gly Thr
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Pro Ile Pro Ala Glu Ile His Tyr Thr Leu Leu Met Asp Pro Met Asn
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Val Phe Tyr Pro Gly Glu Tyr Val Gly Tyr Leu Val Asp Ala Glu Gly
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Gly Asp Ile Tyr Gly Ser Tyr Gln Pro Thr Tyr Thr Tyr Ala Ile Ile
            3445            3450            3455
Val Gln Glu Val Glu Arg Glu Asp Ala Asp Asn Thr Ser Phe Leu Gly
            3460            3465            3470
Lys Ile Tyr Gln Ile Asp Ile Gly Tyr Ser Glu Tyr Lys Ile Val Ser
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Ser Leu Asp Leu Tyr Lys Phe Ser Arg Pro Asp Glu Ser Ser Gln Asn
            3490            3495            3500
Arg Asp Ser Ala Pro Thr Thr Pro Thr Ser Pro Thr Glu Phe Leu Thr
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Pro Gly Leu Arg Ser Ile Pro Pro Leu Phe Ser Gly Lys Glu Ser His
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Lys Ser Pro Ser Thr Lys His His Ser Pro Arg Lys Leu Lys Val Asn
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Ala Leu Pro Glu Ile Leu Lys Glu Val Thr Ser Val Val Glu Gln Ala
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Trp Lys Leu Pro Glu Ser Glu Arg Lys Lys Ile Ile Arg Arg Leu Tyr
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Leu Lys Trp His Pro Asp Lys Asn Pro Glu Asn His Asp Ile Ala Asn
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Glu Val Phe Lys His Leu Gln Asn Glu Ile Asn Arg Leu Glu Lys Gln
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Ala Phe Leu Asp Gln Asn Ala Asp Arg Ala Ser Arg Arg Thr Phe Ser
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Thr Ser Ala Ser Arg Phe Gln Ser Asp Lys Tyr Ser Phe Gln Arg Phe
            3635            3640            3645
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Tyr Thr Ser Trp Asn Gln Glu Ala Thr Ser His Lys Ser Glu Arg Gln
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Gln Arg Phe Phe Val Pro Pro Thr Phe Lys Ser Val Gly Asn Pro Val
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Glu Ala Arg Arg Trp Leu Arg Gln Ala Arg Ala Asn Phe Ser Ala Ala
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Arg Asn Asp Leu His Lys Asn Ala Asn Glu Trp Val Cys Phe Lys Cys
        3715                3720                3725
Tyr Leu Ser Thr Lys Leu Ala Leu Ile Ala Ala Asp Tyr Ala Val Arg
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Gly Lys Ser Asp Lys Asp Val Lys Pro Thr Ala Leu Ala Gln Lys Ile
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Glu Glu Tyr Ser Gln Gln Leu Glu Gly Leu Thr Asn Asp Val His Thr
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Leu Glu Ala Tyr Gly Val Asp Ser Leu Lys Thr Arg Tyr Pro Asp Leu
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Leu Pro Phe Pro Gln Ile Pro Asn Asp Arg Phe Thr Ser Glu Val Ala
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Trp Lys Asn Leu Tyr Ile His Phe Ser Glu Asp Leu Thr Leu Phe Asp
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Glu Met Pro Leu Ile Pro Arg Thr Ile Leu Glu Glu Gly Gln Thr Cys
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Val Glu Leu Ile Arg Leu Arg Ile Pro Ser Leu Val Ile Leu Asp Asp
65                  70                  75                  80
Glu Ser Glu Ala Gln Leu Pro Glu Phe Leu Ala Asp Ile Val Gln Lys
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Leu Gly Gly Phe Val Leu Lys Lys Leu Asp Ala Ser Ile Gln His Pro
            100                 105                 110
Leu Ile Lys Lys Tyr Ile His Ser Pro Leu Pro Ser Ala Val Leu Gln
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Ile Met Glu Lys Met Pro Leu Gln Lys Leu Cys Asn Gln Ile Thr Ser
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1025                1030                1035                1040
Ala Leu Phe Glu Met Ala Lys Ser Gly Gln Ser Lys Lys Pro Ser Asp
            1045                1050                1055
Glu Leu Ser Gln Lys Thr Val Glu Cys Thr Thr Trp Leu Leu Cys Thr
            1060                1065                1070
Cys Met Asp Thr Gly Glu Ala Leu Lys Phe Ser Leu Ser Glu Ser Gly
            1075                1080                1085
Arg Arg Leu Gly Leu Val Pro Cys Gly Ala Val Gly Val Gln Leu Ser
    1090                1095                1100
Glu Ile Gln Asp Gln Lys Trp Thr Val Lys Pro His Ile Gly Glu Val
1105                1110                1115                1120
```

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Phe Cys Tyr Leu Pro Leu Arg Ile Lys Thr Gly Leu Pro Val His Ile
              1125                1130                1135
Asn Gly Cys Phe Ala Val Thr Ser Asn Arg Lys Glu Ile Trp Lys Thr
              1140                1145                1150
Asp Thr Lys Gly Arg Trp Asn Thr Thr Phe Met Arg His Val Ile Val
           1155                1160                1165
Lys Ala Tyr Leu Gln Val Leu Ser Val Leu Arg Asp Leu Ala Thr Ser
        1170                1175                1180
Gly Glu Leu Met Asp Tyr Thr Tyr Tyr Ala Val Trp Pro Asp Pro Asp
1185                1190                1195                1200
Leu Val His Asp Asp Phe Ser Val Ile Cys Gln Gly Phe Tyr Glu Asp
              1205                1210                1215
Ile Ala His Gly Lys Gly Lys Glu Leu Thr Lys Val Phe Ser Asp Gly
              1220                1225                1230
Ser Thr Trp Val Ser Met Lys Asn Val Arg Phe Leu Asp Asp Ser Ile
              1235                1240                1245
Leu Lys Arg Arg Asp Val Gly Ser Ala Ala Phe Lys Ile Phe Leu Lys
        1250                1255                1260
Tyr Leu Lys Lys Thr Gly Ser Lys Asn Leu Cys Ala Val Glu Leu Pro
1265                1270                1275                1280
Ser Ser Val Lys Leu Gly Phe Glu Glu Ala Gly Cys Lys Gln Ile Leu
              1285                1290                1295
Leu Glu Asn Thr Phe Ser Glu Lys Gln Phe Phe Ser Glu Val Phe Phe
              1300                1305                1310
Pro Asn Ile Gln Glu Ile Glu Ala Glu Leu Arg Asp Pro Leu Met Ile
              1315                1320                1325
Phe Val Leu Asn Glu Lys Val Asp Glu Phe Ser Gly Val Leu Arg Val
        1330                1335                1340
Thr Pro Cys Ile Pro Cys Ser Leu Glu Gly His Pro Leu Val Leu Pro
1345                1350                1355                1360
Ser Arg Leu Ile His Pro Glu Gly Arg Val Ala Lys Leu Phe Asp Ile
              1365                1370                1375
Lys Asp Gly Arg Phe Pro Tyr Gly Ser Thr Gln Asp Tyr Leu Asn Pro
        1380                1385                1390
Ile Ile Leu Ile Lys Leu Val Gln Leu Gly Met Ala Lys Asp Asp Ile
        1395                1400                1405
Leu Trp Asp Asp Met Leu Glu Arg Ala Val Ser Val Ala Glu Ile Asn
     1410                1415                1420
Lys Ser Asp His Val Ala Ala Cys Leu Arg Ser Ile Leu Leu Ser
1425                1430                1435                1440
Leu Ile Asp Glu Lys Leu Lys Ile Arg Asp Pro Arg Ala Lys Asp Phe
              1445                1450                1455
Ala Ala Lys Tyr Gln Thr Ile Arg Phe Leu Pro Phe Leu Thr Lys Pro
           1460                1465                1470
Ala Gly Phe Ser Leu Asp Trp Lys Gly Asn Ser Phe Lys Pro Glu Thr
        1475                1480                1485
Met Phe Ala Ala Thr Asp Leu Tyr Thr Ala Glu His Gln Asp Ile Val
     1490                1495                1500
Cys Leu Leu Gln Pro Ile Leu Asn Glu Asn Ser His Ser Phe Arg Gly
1505                1510                1515                1520
Cys Gly Ser Val Ser Leu Ala Val Lys Glu Phe Leu Gly Leu Leu Lys
           1525                1530                1535
Lys Pro Thr Val Asp Leu Val Ile Asn Gln Leu Lys Glu Val Ala Lys
           1540                1545                1550
Ser Val Asp Asp Gly Ile Thr Leu Tyr Gln Glu Asn Ile Thr Asn Ala
        1555                1560                1565
Cys Tyr Lys Tyr Leu His Glu Ala Leu Met Gln Asn Glu Ile Thr Lys
     1570                1575                1580
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Met Ser Ile Ile Asp Lys Leu Lys Pro Phe Ser Phe Ile Leu Val Glu
1585            1590            1595            1600
Asn Ala Tyr Val Asp Ser Glu Lys Val Ser Phe His Leu Asn Phe Glu
            1605            1610            1615
Ala Ala Pro Tyr Leu Tyr Gln Leu Pro Asn Lys Tyr Lys Asn Asn Phe
        1620            1625            1630
Arg Glu Leu Phe Glu Thr Val Gly Val Arg Gln Ser Cys Thr Val Glu
        1635            1640            1645
Asp Phe Ala Leu Val Leu Glu Ser Ile Asp Gln Glu Arg Gly Thr Lys
        1650            1655            1660
Gln Ile Thr Glu Glu Asn Phe Gln Leu Cys Arg Arg Ile Ile Ser Glu
1665            1670            1675            1680
Gly Ile Trp Ser Leu Ile Arg Glu Lys Lys Gln Glu Phe Cys Glu Lys
            1685            1690            1695
Asn Tyr Gly Lys Ile Leu Leu Pro Asp Thr Asn Leu Met Leu Leu Pro
        1700            1705            1710
Ala Lys Ser Leu Cys Tyr Asn Asp Cys Pro Trp Ile Lys Val Lys Asp
        1715            1720            1725
Thr Thr Val Lys Tyr Cys His Ala Asp Ile Pro Arg Glu Val Ala Val
        1730            1735            1740
Lys Leu Gly Ala Val Pro Lys Arg His Lys Ala Leu Glu Arg Tyr Ala
1745            1750            1755            1760
Ser Asn Val Cys Phe Thr Thr Leu Gly Thr Glu Phe Gly Gln Lys Glu
            1765            1770            1775
Lys Leu Thr Ser Arg Ile Lys Ser Ile Leu Asn Ala Tyr Pro Ser Glu
        1780            1785            1790
Lys Glu Met Leu Lys Glu Leu Leu Gln Asn Ala Asp Asp Ala Lys Ala
        1795            1800            1805
Thr Glu Ile Cys Phe Val Phe Asp Pro Arg Gln His Pro Val Asp Arg
        1810            1815            1820
Ile Phe Asp Asp Lys Trp Ala Pro Leu Gln Gly Pro Ala Leu Cys Val
1825            1830            1835            1840
Tyr Asn Asn Gln Pro Phe Thr Glu Asp Asp Val Arg Gly Ile Gln Asn
            1845            1850            1855
Leu Gly Lys Gly Thr Lys Glu Gly Asn Pro Tyr Lys Thr Gly Gln Tyr
        1860            1865            1870
Gly Ile Gly Phe Asn Ser Val Tyr His Ile Thr Asp Cys Pro Ser Phe
        1875            1880            1885
Ile Ser Gly Asn Asp Ile Leu Cys Ile Phe Asp Pro His Ala Arg Tyr
        1890            1895            1900
Ala Pro Gly Ala Thr Ser Ile Ser Pro Gly Arg Met Phe Arg Asp Leu
1905            1910            1915            1920
Asp Ala Asp Phe Arg Thr Gln Phe Ser Asp Val Leu Asp Leu Tyr Leu
            1925            1930            1935
Gly Thr His Phe Lys Leu Asp Asn Cys Thr Met Phe Arg Phe Pro Leu
        1940            1945            1950
Arg Asn Ala Glu Met Ala Lys Val Ser Glu Ile Ser Ser Val Pro Ala
        1955            1960            1965
Ser Asp Arg Met Val Gln Asn Leu Leu Asp Lys Leu Arg Ser Asp Gly
        1970            1975            1980
Ala Glu Leu Leu Met Phe Leu Asn His Met Glu Lys Ile Ser Ile Cys
1985            1990            1995            2000
Glu Ile Asp Lys Ser Thr Gly Ala Leu Asn Val Leu Tyr Ser Val Lys
            2005            2010            2015
Gly Lys Ile Thr Asp Gly Asp Arg Leu Lys Arg Lys Gln Phe His Ala
        2020            2025            2030
Ser Val Ile Asp Ser Val Thr Lys Lys Arg Gln Leu Lys Asp Ile Pro
        2035            2040            2045
```

Val Gln Gln Ile Thr Tyr Thr Met Asp Thr Glu Asp Ser Glu Gly Asn
    2050   2055   2060

Leu Thr Thr Trp Leu Ile Cys Asn Arg Ser Gly Phe Ser Ser Met Glu
2065   2070   2075   2080

Lys Val Ser Lys Ser Val Ile Ser Ala His Lys Asn Gln Asp Ile Thr
                2085   2090   2095

Leu Phe Pro Arg Gly Gly Val Ala Ala Cys Ile Thr His Asn Tyr Lys
                2100   2105   2110

Lys Pro His Arg Ala Phe Cys Phe Leu Pro Leu Ser Leu Glu Thr Gly
                2115   2120   2125

Leu Pro Phe His Val Asn Gly His Phe Ala Leu Asp Ser Ala Arg Arg
                2130   2135   2140

Asn Leu Trp Arg Asp Asp Asn Gly Val Gly Val Arg Ser Asp Trp Asn
2145   2150   2155   2160

Asn Ser Leu Met Thr Ala Leu Ile Ala Pro Ala Tyr Val Asn Cys Tyr
                2165   2170   2175

Ser Lys Asn Gly Ile Ser Leu Val Leu Ile Gln His Tyr Gln Cys Tyr
                2180   2185   2190

Arg Thr Pro Leu Phe Met Leu Arg Thr Leu Arg Ser Phe Tyr Arg Phe
                2195   2200   2205

Ser Gln Leu Thr Val Leu Ile Tyr Ser Gln Ile Tyr Ile Val Lys His
    2210   2215   2220

Phe Thr Ile Ala Phe Thr Lys Thr Asn Val Phe Tyr Leu Leu Cys Gly
2225   2230   2235   2240

Leu Gln Ile Leu Met Ala Leu Thr Cys Thr Leu Gln Leu Leu Leu Gly
                2245   2250   2255

Ser Ile Cys Leu Leu Leu Ile Lys Leu Asp His Phe Leu Thr Ile Tyr
                2260   2265   2270

Tyr Arg Met Asn Tyr Asn Thr Leu Lys Met Gln Ile Ile Ile Ser Pro
    2275   2280   2285

His Ala Lys Gln Gln Arg Met Ser Ile Gly Asn Ile Ser Phe Lys Leu
    2290   2295   2300

Val Ser Thr Trp Phe Ile Thr Val Met Lys Leu Leu Ile Phe Thr Thr
2305   2310   2315   2320

Val Leu Met Gln Ile Phe Leu Leu Val Met Pro Leu Leu Ile Ser Asp
                2325   2330   2335

Leu Phe His Phe Pro Leu Leu Thr Leu Ile Ala Ile Leu Gly Ser Cys
                2340   2345   2350

Leu Val Val Cys Ser Arg Leu Ile Asn Phe Phe Ile Val Asn Phe Leu
                2355   2360   2365

Ile Ile Val Leu Lys Met Gln Lys Lys Met Arg Leu Lys Leu Arg Asp
    2370   2375   2380

Cys Pro Phe Ser Ser His Trp Thr Val Phe Cys Lys Leu Leu Met Gln
2385   2390   2395   2400

Asn Asp Pro Ser Phe Gln His Ile Met Asn Phe His Pro Ala Lys Thr
                2405   2410   2415

Cys Leu Ile His Tyr Ile Asn Ile Val Ile Phe Tyr Thr Val Lys Leu
                2420   2425   2430

Gln Lys Cys Leu Thr Phe Pro Ala Leu Leu Ile Cys Tyr Pro Leu Cys
    2435   2440   2445

Cys Leu Glu Asn Ile Arg Pro Lys Val Ala Gln Ser Gly Lys Thr Ile
    2450   2455   2460

Leu Gln Val Ser Leu Gly Leu Arg Met His Gly Ile Leu Leu Val Asn
2465   2470   2475   2480

Leu Val Lys Lys Ile Arg Lys Lys Gln Asn Gln His Leu Thr Leu Leu
                2485   2490   2495

Leu Ile Leu Lys Thr Gly His Cys Phe Gln Glu Gln Ser Leu Leu Phe
                2500   2505   2510

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Gln Pro Thr Ser Leu Trp Phe Leu Lys Glu Met Phe Cys Phe Leu Ser
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Ala Leu Cys Thr Leu Gln Phe Phe Gln Met Pro Arg Val Ile Lys Phe
        2530                2535                2540
Phe Met Leu Lys Pro Ala Val Phe Ser Leu Leu Thr Lys Ser Val Pro
2545                2550                2555                2560
Lys Thr Val His Leu Phe Leu Cys Cys His Val Thr Gln Gln Ile Arg
                2565                2570                2575
Ala Pro Gln Ala Ser Arg Leu Tyr Ile Ile Trp Ser Lys Leu Gln His
        2580                2585                2590
Leu Glu Gln Lys Asn Lys Met Ile Leu Arg His Phe Cys Ile Ser Thr
        2595                2600                2605
Ala Ile Ile Ile Cys Pro Lys Met Ile Lys Phe Ser His Phe Arg Ala
        2610                2615                2620
Ile Asn Pro Ser Val Ala Ala Met Ala Leu Glu Asn Leu Glu His Ala
2625                2630                2635                2640
Thr Tyr Leu Gln Lys Val Ser Leu Gln Leu Lys Trp Arg Asn Gly His
                2645                2650                2655
Asn His His His Leu His Phe Leu Lys Lys Lys Tyr Thr Lys Asn Tyr
        2660                2665                2670
Met Arg Leu Val Val Tyr Leu Met Ile Leu Arg Tyr Ile Asn Thr Ser
        2675                2680                2685
Tyr Gln Lys Leu Lys Ile Ser Leu Met Met Gln Asn Ser Thr Ser Thr
        2690                2695                2700
Leu Arg Ile Asp Tyr Gln Val Leu Arg Asn Tyr Gln Arg Leu Arg Asn
2705                2710                2715                2720
Asn Phe Leu Lys Asn Trp Lys Val Tyr Ser Met Met Leu Thr Val Asp
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Ser Lys Gln Ser Ile Ser Met Ile Glu Leu Glu Phe Leu Lys Leu Cys
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Phe Leu Lys Asn Cys Leu Phe Leu Met Ile Ser Leu Arg Asn Trp Asn
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Asn Leu Asn Pro Lys Ile Met Leu His Leu His Pro Gly Trp Asn Ser
        2770                2775                2780
Glu Ile Leu Asp Asn Thr Tyr Phe Leu Ser Ser Ser Cys Tyr Ser Leu
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Leu Arg Lys Ser Val Gly Leu Ile Gln Lys Thr Gly Pro Lys Lys His
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Cys Lys Ile Gln Leu Ile Ser Phe Cys Ile Ile Tyr Ser Lys Asn Glu
        2820                2825                2830
Trp Ile Cys Tyr Leu Glu Ile Phe Lys Asn Tyr Leu Tyr His Ser Tyr
        2835                2840                2845
Val Leu Ser Gly Pro Pro Arg Asn Ser Leu Asp Phe Ile Leu Asn Ile
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Lys Arg Met Glu His Phe Leu Leu Ser Ser Met Glu His Arg Ile Gln
2865                2870                2875                2880
Asn Ser Ser Asn Val Met Tyr Ser Ser Cys Tyr Gly His Pro Ala Leu
                2885                2890                2895
Phe Phe Gln Arg Lys Leu His Pro Ala Leu Lys Asn Lys Lys Val Val
        2900                2905                2910
Thr Leu Val His Lys Asn Ser Leu Asn Lys Phe Ile Cys Leu Met Leu
        2915                2920                2925
Thr Trp Ile Leu Leu Leu Ile Arg Ser Ile Thr Ala Glu Thr Tyr Ala
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Thr Arg Arg Trp Met Lys Lys Trp Lys Leu Glu Gln Lys Ser Gly Ala
2945                2950                2955                2960
Tyr Met Asn Ser Ser Val Gln Lys Lys Gly Asn Phe Val Phe Ser Cys
                2965                2970                2975
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Ser Thr Asn Met Asn Leu Ile Leu Asn Leu Ile Cys Thr Ser Tyr Leu
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Asn Leu Ala His Phe Thr Ser Cys Ser Asn Thr Val Leu Lys Ile Leu
      3010                3015                3020
Phe Gln Leu Ser Asn Met Leu Lys Cys Ala Ala Tyr Leu Lys Ile Leu
3025                3030                3035                3040
Arg Ala Asn Asn Ile Leu Met Lys Cys Val Gln Leu Arg Glu Phe Leu
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Val Cys Ser Gly Val Tyr Arg Met Ile Gln Ser Arg Gly Val Ile Ser
          3060                3065                3070
Arg Met Tyr Glu Thr Leu Arg Phe Thr Ser Gln Ala Arg Met Val Asp
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Trp Ser Gln Ala Ser Cys Leu Thr Met Arg His Ile Ile Lys Val Glu
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Ser Arg Gly Ile Leu Val Cys Lys Cys Leu Ile Ser Ala Ser Ala Thr
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Gly Lys Thr Met Asp Phe Thr Leu Ser Cys Ser Phe Leu Lys Asn Leu
          3125                3130                3135
Asp Leu Asp Tyr Ala Val Tyr Leu Lys Asn Asn Met Lys Arg Leu Pro
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Lys Phe Val Ser Leu Glu Arg Cys Val Leu Phe Lys Glu Asp Cys Ser
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Tyr Ser Cys Leu Leu Asn Ser Ser Leu Gln Asp Leu Glu Leu Ser Met
          3170                3175                3180
Lys Met Ile Met Leu Phe Trp Pro Met Lys Lys Pro Asp Phe Ala
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Lys Pro Glu Lys Asp Lys Tyr Pro Ala Leu Lys Ser Phe Lys Gln His
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Glu Leu Lys Val Leu Ile Leu Phe Pro Thr Ala Glu Val Lys Leu Leu
          3220                3225                3230
Leu Phe Ser Asp Leu Val Met Gln Ser Ser Cys Ser Thr Phe Asn Ile
          3235                3240                3245
Gln Thr Val Lys Thr Leu Ile Ser Cys His Trp Gln Leu Leu Asn Gln
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Gln Leu Thr Ile Phe Leu Thr Leu His Ile Leu Leu Cys Asp Ala Met
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Ile Phe Thr Gly Leu Val Arg Asn Leu Thr Val Glu Asn Met Thr Leu
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Arg Ser His Gln Asn Trp Asn Phe Gln Cys Leu Ala His Gln Phe Leu
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Leu Lys Phe Ile Thr Leu Cys Leu Trp Thr Gln Met Phe Phe Thr Arg
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Glu Asn Met Leu Gly Thr Leu Leu Met Leu Lys Val Val Ile Ser Met
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Asp His Thr Ser Gln His Thr His Met Gln Leu Leu Tyr Lys Lys Leu
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Lys Glu Lys Met Leu Thr Ile Leu Val Phe Glu Arg Tyr Ile Arg Ile
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Leu Val Ile Val Asn Ile Lys Leu Ala Leu Leu Ile Cys Ile Ser Phe
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Gln Asp Leu Arg Lys Ala Leu Lys Ala Gly Thr Val Leu Leu Leu His
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Gln Pro Ala Pro Leu Ser Ser Ser Pro Leu Ala Glu Ala Phe Leu Leu
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Phe Ser Leu Val Glu Arg Ala Thr Arg Leu Leu Pro Asn Ile Ser Pro
3425                3430                3435                3440
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Pro Lys Ser Leu Arg Leu Ile Leu Tyr Gln Lys Ser Lys Lys His Leu
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Trp Trp Ser Lys His Gly Ser Phe Gln Asn Arg Asn Glu Lys Arg Leu
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Leu Gly Gly Cys Ile Asn Gly Ile Leu Thr Lys Ile Gln Arg Thr Met
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Thr Leu Pro Met Lys Phe Leu Asn Ile Cys Arg Met Lys Ser Thr Asp
        3490                3495            3500
Lys Asn Arg Leu Phe Ile Lys Met Gln Thr Gly Pro Pro Asp Glu His
3505                3510            3515                3520
Phe Gln Pro Gln His Pro Asp Phe Ser Gln Thr Asn Thr His Phe Arg
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Asp Ser Ile Leu His Gly Ile Lys Lys Gln Arg Ala Ile Asn Leu Lys
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Asp Ser Asn Arg Thr Lys Lys Asn Ala Pro Leu Gln Pro Asp Arg Leu
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Thr Leu Lys Gly Ser Leu Phe Leu Pro Leu Ser Ser Arg Leu Ala Ile
            3570                3575            3580
Gln Trp Lys His Ala Asp Gly Asp Lys Pro Glu Gln Thr Ser Gln Leu
3585                3590            3595                3600
Pro Gly Met Thr Phe Ile Lys Met Pro Met Ser Gly Cys Ala Leu Asn
            3605                3610            3615
Val Thr Phe Leu Pro Ser Leu Leu Gln Leu Thr Met Leu Gly Glu Ser
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Leu Ile Lys Met Asn Gln Leu His Leu Leu Arg Lys Arg Asn Ile Val
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Ser Asn Leu Lys Asp Gln Met Met Phe Thr His Trp Lys Leu Met Val
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Thr Val Lys Gln Asp Thr Leu Ile Cys Phe Pro Phe Leu Arg Ser Gln
3665                3670            3675                3680
Met Thr Gly Ser Leu Leu Arg Leu Leu Gly Trp Asn Val Leu Pro Val
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            20                  25                  30
Lys Val Arg His Val Trp Asn Ser Leu Asp Ser Gly Phe His Arg Ser
        35                  40                  45
Phe Thr Met Asn Leu Lys His Ser Phe Gln Asn Phe Gln Thr Leu Tyr
    50                  55                  60
Lys Asn Leu Glu Gly Leu Ser Leu Lys Asn Met His Leu Tyr Asn Ile
65                  70                  75                  80
Arg Leu Leu Lys Asn Ile Phe Ile His His Tyr Gln Val Leu Phe Cys
                85                  90                  95
Arg Trp Arg Arg Cys His Cys Arg Asn Cys Val Ile Lys Leu Arg Tyr
            100                 105                 110
Phe Gln His Thr Lys Met Pro Gly Ser Ser Trp Leu Val Pro Ile Ala
        115                 120                 125
Val Arg Lys Arg Lys Glu Leu Phe Lys Asn Trp Gln Tyr Ser Ser Ala
    130                 135                 140
Leu Thr Ile Leu Leu Ile Arg Glu Phe Pro Leu Ile Gln Asn Lys Val
145                 150                 155                 160
Val Lys Ser Tyr Thr Ile Leu Pro Asn Ser Gln Gln Ile Cys Asp Phe
                165                 170                 175
Leu Phe Gln Thr Val Val Met Lys Leu Leu Phe Val Trp Gln Thr Cys
            180                 185                 190
Lys Asn Ser Arg Pro Leu Ala Ala Ser Leu Phe Lys Ile Leu Lys Met
            195                 200                 205
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His Phe Ile His Met Lys Arg His Ser Leu Cys Tyr Gly Ser Leu Arg
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Ile Tyr Leu Leu Leu Lys Met Arg Ile Gln Met Cys Leu Ser Gly His
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His Asn Ser Ser Arg Tyr His Arg Asn Arg Trp Tyr Gln Leu Val Asn
             245   250   255

Ser Leu Thr Leu Ile Lys Tyr Arg Ile Ser Phe Val Met Lys Lys Glu
             260   265   270

Pro Ile Ser His Pro Gln Phe Leu Pro His Gln Ile Phe Phe Thr Pro
             275   280   285

Asp Arg Leu Val Lys Thr Lys Pro Val Ser Lys Lys Arg Met Leu Cys
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Lys Trp Gln Lys Lys Leu Lys Pro Tyr Arg Ser Val Leu Val Leu Ile
305   310   315   320

Lys Met Phe Phe Arg Lys Pro Lys Pro Ser Tyr Trp Phe Ile Arg Ile
             325   330   335

Thr His Cys Cys Asn His Leu Lys Glu Arg His Arg Lys Asn Gly Phe
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Gln Pro Ala Arg Lys Gly Leu Gln Ile Ile Gln Ala Leu Trp Ser Gly
             355   360   365

Lys Glu Ile Ser Val Ile Ser Val His His Gln Ile Cys Val Met Ala
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Met Gln Phe Ser Leu Ala Pro His Phe Leu Leu Leu Lys Val Ser Met
385   390   395   400

Thr Trp Lys Lys His Gly Ser Ser Gln Asn Leu Ala Leu Val Leu Ser
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Asn Thr Leu Lys Leu Leu Leu Ile Gly Ile Leu Gln Lys Pro Leu Val
             420   425   430

Met Lys Thr Thr Ile Asn Ser Ser Ile Phe Cys Leu Arg Phe Thr Asp
             435   440   445

Ser Cys Met Ile Ile Met Lys Gly Lys Ile Leu Leu Glu Pro Asn Phe
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His Gly Phe Gly Leu Ala Lys Ser Phe Val His Leu Pro Arg Leu Leu
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Asn Gln Ser Met Ile Leu Thr Phe Ser Leu Ile Cys Ile Met Tyr Leu
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Lys Pro Trp Gln Asn Ser Thr Asn Tyr Leu Arg Ser Val Val Gln Arg
             500   505   510

Ser His Gln Ile Ile Phe Pro Trp Leu Phe Arg Arg Tyr Ile Ser Lys
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Val Thr Lys Ile Ser Val Asn Lys Lys Ala Asn Lys Ile Phe Ile Leu
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Cys Ile Leu Ser Asp Gly Cys Ile Ala Ile Arg Phe Gln Gln Ala Pro
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Thr His Gln Phe Leu Tyr Ile Ile Ala Lys Ile Leu Leu Asn Leu Ser
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Ser Gln Phe Thr Asn Ala Val Ile Val Thr Leu Lys Leu Met Thr Leu
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Met Thr Tyr Leu Lys Ile Leu Trp Asn Gln Ser Phe Trp Cys Met Arg
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Thr Tyr Pro Lys Leu Gln Asn Gly Lys Phe His Ala Leu Val Gln Asp
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Ile Leu Lys Thr Trp Asp Leu Ser Ser Gln Asp Lys Glu Ser His Leu
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Leu Glu Leu Lys Ile Phe Trp Lys Asn Thr Leu Gln Cys Gln Ile Phe
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Leu Lys Asn Tyr Phe Lys Thr Leu Met Met Gln Met Gln Gln Asn Ala
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Trp Gln Leu Val Met Asp Leu Leu Cys Gly His Ser Thr Ile Leu Asn
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Ser Gln Ile Gln Ile Leu Thr Leu Gly Glu Asn Leu Lys Gly Glu Lys
705             710             715             720
Leu Thr Lys Leu Glu Asn Leu Val Leu Asp Leu Ile Leu Cys Thr Ile
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Ser Leu Thr Phe Pro Ser Leu Val Gly Asn Ser Cys Ser Ile Gln Thr
        740             745             750
Ile Ile Ser Val Asn Thr Leu Lys Thr Asn Pro Ile Leu Gly Ser Lys
        755             760             765
Leu Ile Gly Val Asn Asn Arg Lys Asp Leu Glu Asn Phe Leu Ile Ser
    770             775             780
Ser Asn His Leu Met Tyr Leu Ala Val Ser Tyr Leu Leu Lys His Leu
785             790             795             800
Thr Ala Ile Met Glu Pro Phe Ser Asp Cys Pro Leu Glu Leu Asn Arg
            805             810             815
Lys Gln Lys Val Lys Leu Val Val Arg Ala Thr Ile Gln Gln Ile Phe
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Ile Leu Leu Trp Met Asn Leu Val Ser Val Asp Thr Gly Leu Ser Phe
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Ser Leu Arg Val Ser Gln Cys Ile Ser Thr Lys Leu Arg Lys Pro Thr
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Pro Val His Lys Ile Gln Leu Lys Lys Asn Pro Ala Leu Pro Lys His
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Thr His Leu Ser Val Phe Lys Arg Leu Leu Ser Ser Arg Leu Ala Ala
            885             890             895
Ala Val Ile Lys Ser Phe Pro Val Met Asn Gln Ser His Leu Ala Phe
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Ile Tyr Ser Arg His Phe Leu Glu Val Gln Met Met Thr Gln Leu Leu
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Ser Leu Lys Trp Leu Ser Leu Ala Asn Gln Lys Ser His Gln Met Ser
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Arg Ile Ile Ser Ile Leu Leu Phe Leu Asn Phe Ser Val Trp Gln Lys
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Met Ile Phe Tyr Gly Met Ile Cys Asn Val Gln Cys Gln Leu Lys Leu
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Ile Lys Val Ile Met Leu Leu His Ala Glu Val Val Ser Tyr Val Leu
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Ser Met Arg Asn Lys Gly Ile Leu Glu Gln Arg Ile Leu Leu Gln Asn
        1315             1320             1325
Ile Lys Gln Ser Ala Ser Phe His Phe Gln Asn Gln Gln Val Phe Leu
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Trp Thr Gly Lys Ala Thr Val Leu Ser Leu Lys Pro Cys Leu Gln Gln
1345             1350             1355             1360
Leu Thr Phe Ile Gln Leu Asn Ile Lys Ile Phe Val Phe Cys Asn Gln
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Phe Met Lys Ile Pro Ile Leu Leu Glu Val Val Val Gln Cys His Trp
            1380             1385             1390
Leu Leu Lys Ser Phe Trp Asp Tyr Ser Arg Ser Gln Gln Leu Ile Trp
        1395             1400             1405
Leu Thr Asn Lys Lys Gln Asn Gln Leu Met Met Glu Leu His Cys Thr
        1410             1415             1420
Arg Arg Ile Ser Pro Met Leu Ala Thr Asn Thr Phe Met Lys Pro Cys
1425             1430             1435             1440
Lys Met Lys Ser Leu Arg Cys Gln Leu Leu Ile Ser Asn Pro Leu Ala
            1445             1450             1455
Ser Phe Leu Arg Met His Met Leu Thr Gln Lys Arg Phe Leu Phe Ile
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Ile Leu Arg Arg His His Thr Phe Ile Ser Cys Leu Ile Ser Ile Lys
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Ile Ile Ser Ala Asn Phe Leu Lys Pro Trp Val Gly Ser His Ala Leu
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Leu Lys Ile Leu Leu Leu Phe Trp Asn Leu Leu Ile Lys Lys Glu Glu
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Gln Ser Lys Gln Lys Arg Ile Phe Ser Phe Ala Asp Glu Ser Val Lys
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Glu Tyr Gly Val Ser Leu Glu Lys Arg Asn Lys Asn Phe Val Arg Lys
            1540             1545             1550
Ile Met Ala Arg Tyr Tyr Cys Gln Ile Leu Ile Leu Cys Phe Ser Leu
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Leu Asn Arg Tyr Ala Thr Met Ile Ala Leu Gly Lys Arg Ile Pro Leu
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Asn Ile Val Met Leu Thr Tyr Pro Gly Lys Gln Asn Glu Gln Ser Gln
1585             1590             1595             1600
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Ser Asp Thr Lys Pro Lys Asp Met His Pro Met Ser Val Leu Gln His
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Leu Ala Gln Asn Leu Gly Arg Lys Lys Asn Pro Ala Glu Leu Arg Ala
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Ser Leu Met His Ile Leu Leu Lys Arg Lys Cys Lys Ser Phe Phe Lys
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Met Leu Met Met Gln Arg Arg Gln Lys Ser Val Leu Cys Leu Ile Leu
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Asp Ser Ile Gln Leu Ile Glu Tyr Leu Met Ile Ser Gly Pro His Cys
1665   1670   1675   1680

Lys Gly Gln His Phe Val Cys Thr Thr Thr Ser His Leu Gln Lys Met
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Met Leu Glu Glu Phe Arg Ile Leu Glu Lys Ala Arg Lys Arg Glu Ile
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Leu Ile Lys Leu Asp Ser Met Glu Asp Ser Ile Leu Cys Ile Ile Ser
            1715   1720   1725

Gln Thr Ala His Leu Leu Phe Leu Ala Met Thr Ser Cys Val Phe Leu
            1730   1735   1740

Ile Leu Met Pro Asp Met His Gln Gly Pro His Pro Leu Val Pro Asp
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Ala Cys Leu Glu Ile Trp Met Gln Ile Leu Gly His Ser Ser Gln Met
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Phe Trp Ile Phe Ile Trp Glu Pro Ile Leu Asn Trp Ile Ile Ala Gln
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Cys Ser Asp Phe Leu Phe Val Met Gln Lys Trp Gln Lys Phe Arg Lys
            1795   1800   1805

Phe Arg Leu Phe Gln His Gln Thr Glu Trp Ser Arg Ile Phe Trp Thr
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Asn Cys Ala Gln Met Gly Gln Asn Phe Cys Phe Leu Ile Thr Trp Lys
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Lys Phe Leu Phe Val Lys Ile Arg Val Leu Glu Leu Met Cys Cys Ile
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Gln Arg Ala Lys Ser Gln Met Glu Thr Asp Lys Gly Asn Asn Phe Met
            1860   1865   1870

His Leu Leu Ile Val Leu Leu Lys Arg Gly Ser Ser Lys Thr Tyr Gln
            1875   1880   1885

Phe Asn Lys Pro Ile Leu Trp Ile Leu Arg Thr Leu Lys Glu Ile Leu
            1890   1895   1900

Leu Arg Gly Phe Val Ile Asp Gln Ala Phe Gln Val Trp Arg Lys Tyr
1905   1910   1915   1920

Leu Lys Val Ser Tyr Gln Leu Thr Arg Thr Lys Ile Leu Leu Phe Ser
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His Val Val Glu Leu Pro Ala Leu Leu Thr Thr Ile Lys Asn Pro Ile
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Gly Pro Ser Val Phe Cys Leu Phe Leu Trp Arg Leu Gly Cys His Phe
            1955   1960   1965

Met Met Ala Thr Leu His Trp Ile Gln Pro Glu Gly Thr Cys Gly Val
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Met Ile Met Glu Leu Val Phe Glu Val Thr Gly Ile Thr Val Gln His
1985   1990   1995   2000

Leu Leu His Met Leu Asn Cys Tyr Ser Lys Asn Gly Ile Ser Leu Val
            2005   2010   2015

Leu Ile Gln His Tyr Gln Cys Tyr Arg Thr Pro Leu Phe Met Leu Arg
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Thr Leu Arg Ser Phe Tyr Arg Phe Ser Gln Leu Thr Val Leu Ile Tyr
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Ser Gln Ile Tyr Ile Val Lys His Phe Thr Ile Ala Phe Thr Lys Thr
            2050   2055   2060

Asn Val Phe Tyr Leu Leu Cys Gly Leu Gln Ile Leu Met Ala Leu Thr
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Cys Thr Leu Gln Leu Leu Leu Gly Ser Ile Cys Leu Leu Leu Ile Lys
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Leu Asp His Phe Leu Thr Ile Tyr Tyr Arg Met Asn Tyr Asn Thr Leu
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Lys Met Gln Ile Ile Ile Ser Pro His Ala Lys Gln Gln Arg Met Ser
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Ile Gly Asn Ile Ser Phe Lys Leu Val Ser Thr Trp Phe Ile Thr Val
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Met Lys Leu Leu Ile Phe Thr Thr Val Leu Met Gln Ile Phe Leu Leu
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Val Met Pro Leu Leu Ile Ser Asp Leu Phe His Phe Pro Leu Leu Thr
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Val Phe Cys Lys Leu Leu Met Gln Asn Asp Pro Ser Phe Gln His Ile
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Met Asn Phe His Pro Ala Lys Thr Cys Leu Ile His Tyr Ile Asn Ile
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Val Ile Phe Tyr Thr Val Lys Leu Gln Lys Cys Leu Thr Phe Pro Ala
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Leu Leu Ile Cys Tyr Pro Leu Cys Cys Leu Glu Asn Ile Arg Pro Lys
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Val Ala Gln Ser Gly Lys Thr Ile Leu Gln Val Ser Leu Gly Leu Arg
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Met His Gly Ile Leu Leu Val Asn Leu Val Lys Lys Ile Arg Lys Lys
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Phe Gln Glu Gln Ser Leu Leu Phe Gln Pro Thr Ser Leu Trp Phe Leu
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Lys Glu Met Phe Cys Phe Leu Ser Ala Leu Cys Thr Leu Gln Phe Phe
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Gln Met Pro Arg Val Ile Lys Phe Phe Met Leu Lys Pro Ala Val Phe
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Ser Leu Leu Thr Lys Ser Val Pro Lys Thr Val His Leu Phe Leu Cys
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Cys His Val Thr Gln Gln Ile Arg Ala Pro Gln Ala Ser Arg Leu Tyr
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Ile Ile Trp Ser Lys Leu Gln His Leu Glu Gln Lys Asn Lys Met Ile
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Leu Arg His Phe Cys Ile Ser Thr Ala Ile Ile Ile Cys Pro Lys Met
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Ile Lys Phe Ser His Phe Arg Ala Ile Asn Pro Ser Val Ala Ala Met
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Ala Leu Glu Asn Leu Glu His Ala Thr Tyr Leu Gln Lys Val Ser Leu
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Gln Leu Lys Trp Arg Asn Gly His Asn His His His Leu His Phe Leu
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Lys Lys Lys Tyr Thr Lys Asn Tyr Met Arg Leu Val Val Tyr Leu Met
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Ile Leu Arg Tyr Ile Asn Thr Ser Tyr Gln Lys Leu Lys Ile Ser Leu
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Met Met Gln Asn Ser Thr Ser Thr Leu Arg Ile Asp Tyr Gln Val Leu
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Tyr Ser Met Met Leu Thr Val Asp Ser Lys Gln Ser Ile Ser Met Ile
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Glu Leu Glu Phe Leu Lys Leu Cys Phe Leu Lys Asn Cys Leu Phe Leu
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Met Ile Ser Leu Arg Asn Trp Asn Asn Leu Asn Pro Lys Ile Met Leu
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His Leu His Pro Gly Trp Asn Ser Glu Ile Leu Asp Asn Thr Tyr Phe
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Leu Ser Ser Ser Cys Tyr Ser Leu Leu Arg Lys Ser Val Gly Leu Ile
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Ser Cys Tyr Gly His Pro Ala Leu Phe Phe Gln Arg Lys Leu His Pro
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Ala Leu Lys Asn Lys Lys Val Val Thr Leu Val His Lys Asn Ser Leu
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Asn Lys Phe Ile Cys Leu Met Leu Thr Trp Ile Leu Leu Leu Ile Arg
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Ser Ile Thr Ala Glu Thr Tyr Ala Thr Arg Arg Trp Met Lys Lys Trp
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Lys Gly Asn Phe Val Phe Ser Cys Glu Gly Leu Leu Leu Trp Lys Met
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Val Gly Asn Phe Ser Leu Arg Arg Ser Thr Asn Met Asn Leu Ile Leu
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Ser Asn Thr Val Leu Lys Ile Leu Phe Gln Leu Ser Asn Met Leu Lys
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Cys His Trp Gln Leu Leu Asn Gln Gln Leu Thr Ile Phe Leu Thr Leu
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Gln Thr Gly Pro Pro Asp Glu His Phe Gln Pro Gln His Pro Asp Phe
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Ser Gln Thr Asn Thr His Phe Arg Asp Ser Ile Leu His Gly Ile Lys
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                20                  25                  30
Trp Lys Asn Leu Tyr Ile His Phe Ser Glu Asp Leu Thr Leu Phe Asp
        35                  40                  45
Glu Met Pro Leu Ile Pro Arg Thr Ile Leu Glu Glu Gly Gln Thr Cys
    50                  55                  60
Val Glu Leu Ile Arg Leu Arg Ile Pro Ser Leu Val Ile Leu Asp Asp
65                  70                  75                  80
Glu Ser Glu Ala Gln Leu Pro Glu Phe Leu Ala Asp Ile Val Gln Lys
                85                  90                  95
Leu Gly Gly Phe Val Leu Lys Lys Leu Asp Ala Ser Ile Gln His Pro
            100                 105                 110
Leu Ile Lys Lys Tyr Ile His Ser Pro Leu Pro Ser Ala Val Leu Gln
        115                 120                 125
Ile Met Glu Lys Met Pro Leu Gln Lys Leu Cys Asn Gln Ile Thr Ser
    130                 135                 140
Leu Leu Pro Thr His Lys Asp Ala Leu Arg Lys Phe Leu Ala Ser Leu
145                 150                 155                 160
Thr Asp Ser Ser Glu Lys Glu Lys Arg Ile Ile Gln Glu Leu Ala Ile
                165                 170                 175
Phe Lys Arg Ile Asn His Ser Ser Asp Gln Gly Ile Ser Ser Tyr Thr
            180                 185                 190
Lys Leu Lys Gly Cys Lys Val Leu His His Thr Ala Lys Leu Pro Ala
        195                 200                 205
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Asp Leu Arg Leu Ser Ile Ser Val Ile Asp Ser Ser Asp Glu Ala Thr
210   215   220

Ile Arg Leu Ala Asn Met Leu Lys Ile Glu Gln Leu Lys Thr Thr Ser
225   230   235   240

Cys Leu Lys Leu Val Leu Lys Asp Ile Glu Asn Ala Phe Tyr Ser His
            245   250   255

Glu Glu Val Thr Gln Leu Met Leu Trp Val Leu Glu Asn Leu Ser Ser
            260   265   270

Leu Lys Asn Glu Asn Pro Asn Val Leu Glu Trp Leu Thr Pro Leu Lys
            275   280   285

Phe Ile Gln Ile Ser Gln Glu Gln Met Val Ser Ala Gly Glu Leu Phe
290   295   300

Asp Pro Asp Ile Glu Val Leu Lys Asp Leu Phe Cys Asn Glu Glu Gly
305   310   315   320

Thr Tyr Phe Pro Pro Ser Val Phe Thr Ser Pro Asp Ile Leu His Ser
            325   330   335

Leu Arg Gln Ile Gly Leu Lys Asn Glu Ala Ser Leu Lys Glu Lys Asp
            340   345   350

Val Val Gln Val Ala Lys Lys Ile Glu Ala Leu Gln Val Gly Ala Cys
            355   360   365

Pro Asp Gln Asp Val Leu Leu Lys Lys Ala Lys Thr Leu Leu Leu Val
370   375   380

Leu Asn Lys Asn His Thr Leu Leu Gln Ser Ser Glu Gly Lys Met Thr
385   390   395   400

Leu Lys Lys Ile Lys Trp Val Pro Ala Cys Lys Glu Arg Pro Pro Asn
            405   410   415

Tyr Pro Gly Ser Leu Val Trp Lys Gly Asp Leu Cys Asn Leu Cys Ala
            420   425   430

Pro Pro Asp Met Cys Asp Val Gly His Ala Ile Leu Ile Gly Ser Ser
            435   440   445

Leu Pro Leu Val Glu Ser Ile His Val Asn Leu Glu Lys Ala Leu Gly
450   455   460

Ile Phe Thr Lys Pro Ser Leu Ser Ala Val Leu Lys His Phe Lys Ile
465   470   475   480

Val Val Asp Trp Tyr Ser Ser Lys Thr Phe Ser Asp Glu Asp Tyr Tyr
            485   490   495

Gln Phe Gln His Ile Leu Leu Glu Ile Tyr Gly Phe Met His Asp His
            500   505   510

Leu Asn Glu Gly Lys Asp Ser Phe Arg Ala Leu Lys Phe Pro Trp Val
            515   520   525

Trp Thr Gly Lys Lys Phe Cys Pro Leu Ala Gln Ala Val Ile Lys Pro
530   535   540

Ile His Asp Leu Asp Leu Gln Pro Tyr Leu His Asn Val Pro Lys Thr
545   550   555   560

Met Ala Lys Phe His Gln Leu Phe Lys Val Cys Gly Ser Ile Glu Glu
            565   570   575

Leu Thr Ser Asp His Ile Ser Met Val Ile Gln Lys Ile Tyr Leu Lys
            580   585   590

Ser Asp Gln Asp Leu Ser Glu Gln Glu Ser Lys Gln Asn Leu His Leu
            595   600   605

Met Leu Asn Ile Ile Arg Trp Leu Tyr Ser Asn Gln Ile Pro Ala Ser
610   615   620

Pro Asn Thr Pro Val Pro Ile His His Ser Lys Asn Pro Ser Lys Leu
625   630   635   640

Ile Met Lys Pro Ile His Glu Cys Cys Tyr Cys Asp Ile Lys Val Asp
            645   650   655

Asp Leu Asn Asp Leu Leu Glu Asp Ser Val Glu Pro Ile Ile Leu Val
            660   665   670

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His Glu Asp Ile Pro Met Lys Thr Ala Glu Trp Leu Lys Val Pro Cys
        675             680             685
Leu Ser Thr Arg Leu Ile Asn Pro Glu Asn Met Gly Phe Glu Gln Ser
        690             695             700
Gly Gln Arg Glu Pro Leu Thr Val Arg Ile Lys Asn Ile Leu Glu Glu
705             710             715             720
Tyr Pro Ser Val Ser Asp Ile Phe Lys Glu Leu Leu Gln Asn Ala Asp
            725             730             735
Asp Ala Asn Ala Thr Glu Cys Ser Phe Leu Ile Asp Met Arg Arg Asn
        740             745             750
Met Asp Ile Arg Glu Asn Leu Leu Asp Pro Gly Met Ala Ala Cys His
        755             760             765
Gly Pro Ala Leu Trp Ser Phe Asn Asn Ser Gln Phe Ser Asp Ser Asp
        770             775             780
Phe Val Asn Ile Thr Arg Leu Gly Glu Ser Leu Lys Arg Gly Glu Val
785             790             795             800
Asp Lys Val Gly Lys Phe Gly Leu Gly Phe Asn Ser Val Tyr His Ile
            805             810             815
Thr Asp Ile Pro Ile Ile Met Ser Arg Glu Phe Met Ile Met Phe Asp
        820             825             830
Pro Asn Ile Asn His Ile Ser Lys His Ile Lys Asp Lys Ser Asn Pro
        835             840             845
Gly Ile Lys Ile Asn Trp Ser Lys Gln Gln Lys Arg Leu Arg Lys Phe
850             855             860
Pro Asn Gln Phe Lys Pro Phe Ile Asp Val Phe Gly Cys Gln Leu Pro
865             870             875             880
Leu Thr Val Glu Ala Pro Tyr Ser Tyr Asn Gly Thr Leu Phe Arg Leu
            885             890             895
Ser Phe Arg Thr Gln Gln Glu Ala Lys Val Ser Glu Val Ser Ser Thr
        900             905             910
Cys Tyr Asn Thr Ala Asp Ile Tyr Ser Leu Val Asp Glu Phe Ser Leu
        915             920             925
Cys Gly His Arg Leu Ile Ile Phe Thr Gln Ser Val Lys Ser Met Tyr
        930             935             940
Leu Lys Tyr Leu Lys Ile Glu Glu Thr Asn Pro Ser Leu Ala Gln Asp
945             950             955             960
Thr Val Ile Ile Lys Lys Lys Ser Cys Ser Ser Lys Ala Leu Asn Thr
            965             970             975
Pro Val Leu Ser Val Leu Lys Glu Ala Ala Lys Leu Met Lys Thr Cys
            980             985             990
Ser Ser Ser Asn Lys Lys Leu Pro Ser Asp Glu Pro Lys Ser Ser Cys
        995             1000            1005
Ile Leu Gln Ile Thr Val Glu Glu Phe His His Val Phe Arg Arg Ile
    1010            1015            1020
Ala Asp Leu Gln Ser Pro Leu Phe Arg Gly Pro Asp Asp Pro Ala
1025            1030            1035            1040
Ala Leu Phe Glu Met Ala Lys Ser Gly Gln Ser Lys Lys Pro Ser Asp
            1045            1050            1055
Glu Leu Ser Gln Lys Thr Val Glu Cys Thr Thr Trp Leu Leu Cys Thr
            1060            1065            1070
Cys Met Asp Thr Gly Glu Ala Leu Lys Phe Ser Leu Ser Glu Ser Gly
        1075            1080            1085
Arg Arg Leu Gly Leu Val Pro Cys Gly Ala Val Gly Val Gln Leu Ser
        1090            1095            1100
Glu Ile Gln Asp Gln Lys Trp Thr Val Lys Pro His Ile Gly Glu Val
1105            1110            1115            1120
Phe Cys Tyr Leu Pro Leu Arg Ile Lys Thr Gly Leu Pro Val His Ile
            1125            1130            1135
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Asn Gly Cys Phe Ala Val Thr Ser Asn Arg Lys Glu Ile Trp Lys Thr
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Asp Thr Lys Gly Arg Trp Asn Thr Thr Phe Met Arg His Val Ile Val
        1155                1160                1165
Lys Ala Tyr Leu Gln Val Leu Ser Val Leu Arg Asp Leu Ala Thr Ser
    1170                1175                1180
Gly Glu Leu Met Asp Tyr Thr Tyr Tyr Ala Val Trp Pro Asp Pro Asp
1185                1190                1195                1200
Leu Val His Asp Asp Phe Ser Val Ile Cys Gln Gly Phe Tyr Glu Asp
                1205                1210                1215
Ile Ala His Gly Lys Gly Lys Glu Leu Thr Lys Val Phe Ser Asp Gly
        1220                1225                1230
Ser Thr Trp Val Ser Met Lys Asn Val Arg Phe Leu Asp Asp Ser Ile
        1235                1240                1245
Leu Lys Arg Arg Asp Val Gly Ser Ala Ala Phe Lys Ile Phe Leu Lys
    1250                1255                1260
Tyr Leu Lys Lys Thr Gly Ser Lys Asn Leu Cys Ala Val Glu Leu Pro
1265                1270                1275                1280
Ser Ser Val Lys Leu Gly Phe Glu Glu Ala Gly Cys Lys Gln Ile Leu
                1285                1290                1295
Leu Glu Asn Thr Phe Ser Glu Lys Gln Phe Phe Ser Glu Val Phe Phe
            1300          ¦    1305                1310
Pro Asn Ile Gln Glu Ile Glu Ala Glu Leu Arg Asp Pro Leu Met Ile
        1315                1320                1325
Phe Val Leu Asn Glu Lys Val Asp Glu Phe Ser Gly Val Leu Arg Val
        1330                1335                1340
Thr Pro Cys Ile Pro Cys Ser Leu Glu Gly His Pro Leu Val Leu Pro
1345                1350                1355                1360
Ser Arg Leu Ile His Pro Glu Gly Arg Val Ala Lys Leu Phe Asp Ile
            1365                1370                1375
Lys Asp Gly Arg Phe Pro Tyr Gly Ser Thr Gln Asp Tyr Leu Asn Pro
        1380                1385                1390
Ile Ile Leu Ile Lys Leu Val Gln Leu Gly Met Ala Lys Asp Asp Ile
    1395                1400                1405
Leu Trp Asp Asp Met Leu Glu Arg Ala Val Ser Val Ala Glu Ile Asn
    1410                1415                1420
Lys Ser Asp His Val Ala Ala Cys Leu Arg Ser Ser Ile Leu Leu Ser
1425                1430                1435                1440
Leu Ile Asp Glu Lys Leu Lys Ile Arg Asp Pro Arg Ala Lys Asp Phe
            1445                1450                1455
Ala Ala Lys Tyr Gln Thr Ile Arg Phe Leu Pro Phe Leu Thr Lys Pro
        1460                1465                1470
Ala Gly Phe Ser Leu Asp Trp Lys Gly Asn Ser Phe Lys Pro Glu Thr
        1475                1480                1485
Met Phe Ala Ala Thr Asp Leu Tyr Thr Ala Glu His Gln Asp Ile Val
    1490                1495                1500
Cys Leu Leu Gln Pro Ile Leu Asn Glu Asn Ser His Ser Phe Arg Gly
1505                1510                1515                1520
Cys Gly Ser Val Ser Leu Ala Val Lys Glu Phe Leu Gly Leu Leu Lys
            1525                1530                1535
Lys Pro Thr Val Asp Leu Val Ile Asn Gln Leu Lys Glu Val Ala Lys
        1540                1545                1550
Ser Val Asp Asp Gly Ile Thr Leu Tyr Gln Glu Asn Ile Thr Asn Ala
        1555                1560                1565
Cys Tyr Lys Tyr Leu His Glu Ala Leu Met Gln Asn Glu Ile Thr Lys
    1570                1575                1580
Met Ser Ile Ile Asp Lys Leu Lys Pro Phe Ser Phe Ile Leu Val Glu
1585                1590                1595                1600
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Asn Ala Tyr Val Asp Ser Glu Lys Val Ser Phe His Leu Asn Phe Glu
          1605   1610   1615

Ala Ala Pro Tyr Leu Tyr Gln Leu Pro Asn Lys Tyr Lys Asn Asn Phe
          1620   1625   1630

Arg Glu Leu Phe Glu Thr Val Gly Val Arg Gln Ser Cys Thr Val Glu
          1635   1640   1645

Asp Phe Ala Leu Val Leu Glu Ser Ile Asp Gln Glu Arg Gly Thr Lys
          1650   1655   1660

Gln Ile Thr Glu Glu Asn Phe Gln Leu Cys Arg Arg Ile Ile Ser Glu
1665   1670   1675   1680

Gly Ile Trp Ser Leu Ile Arg Glu Lys Lys Gln Glu Phe Cys Glu Lys
          1685   1690   1695

Asn Tyr Gly Lys Ile Leu Leu Pro Asp Thr Asn Leu Met Leu Leu Pro
          1700   1705   1710

Ala Lys Ser Leu Cys Tyr Asn Asp Cys Pro Trp Ile Lys Val Lys Asp
          1715   1720   1725

Thr Thr Val Lys Tyr Cys His Ala Asp Ile Pro Arg Glu Val Ala Val
          1730   1735   1740

Lys Leu Gly Ala Val Pro Lys Arg His Lys Ala Leu Glu Arg Tyr Ala
1745   1750   1755   1760

Ser Asn Val Cys Phe Thr Thr Leu Gly Thr Glu Phe Gly Gln Lys Glu
          1765   1770   1775

Lys Leu Thr Ser Arg Ile Lys Ser Ile Leu Asn Ala Tyr Pro Ser Glu
          1780   1785   1790

Lys Glu Met Leu Lys Glu Leu Leu Gln Asn Ala Asp Asp Ala Lys Ala
          1795   1800   1805

Thr Glu Ile Cys Phe Val Phe Asp Pro Arg Gln His Pro Val Asp Arg
          1810   1815   1820

Ile Phe Asp Asp Lys Trp Ala Pro Leu Gln Gly Pro Ala Leu Cys Val
1825   1830   1835   1840

Tyr Asn Asn Gln Pro Phe Thr Glu Asp Asp Val Arg Gly Ile Gln Asn
          1845   1850   1855

Leu Gly Lys Gly Thr Lys Glu Gly Asn Pro Tyr Lys Thr Gly Gln Tyr
          1860   1865   1870

Gly Ile Gly Phe Asn Ser Val Tyr His Ile Thr Asp Cys Pro Ser Phe
          1875   1880   1885

Ile Ser Gly Asn Asp Ile Leu Cys Ile Phe Asp Pro His Ala Arg Tyr
1890   1895   1900

Ala Pro Gly Ala Thr Ser Ile Ser Pro Gly Arg Met Phe Arg Asp Leu
1905   1910   1915   1920

Asp Ala Asp Phe Arg Thr Gln Phe Ser Asp Val Leu Asp Leu Tyr Leu
          1925   1930   1935

Gly Thr His Phe Lys Leu Asp Asn Cys Thr Met Phe Arg Phe Pro Leu
          1940   1945   1950

Arg Asn Ala Glu Met Ala Lys Val Ser Glu Ile Ser Ser Val Pro Ala
          1955   1960   1965

Ser Asp Arg Met Val Gln Asn Leu Leu Asp Lys Leu Arg Ser Asp Gly
          1970   1975   1980

Ala Glu Leu Leu Met Phe Leu Asn His Met Glu Lys Ile Ser Ile Cys
1985   1990   1995   2000

Glu Ile Asp Lys Ser Thr Gly Ala Leu Asn Val Leu Tyr Ser Val Lys
          2005   2010   2015

Gly Lys Ile Thr Asp Gly Asp Arg Leu Lys Arg Lys Gln Phe His Ala
          2020   2025   2030

Ser Val Ile Asp Ser Val Thr Lys Lys Arg Gln Leu Lys Asp Ile Pro
          2035   2040   2045

Val Gln Gln Ile Thr Tyr Thr Met Asp Thr Glu Asp Ser Glu Gly Asn
          2050   2055   2060

Leu Thr Thr Trp Leu Ile Cys Asn Arg Ser Gly Phe Ser Ser Met Glu
2065   2070   2075   2080
Lys Val Ser Lys Ser Val Ile Ser Ala His Lys Asn Gln Asp Ile Thr
            2085   2090   2095
Leu Phe Pro Arg Gly Gly Val Ala Ala Cys Ile Thr His Asn Tyr Lys
            2100   2105   2110
Lys Pro His Arg Ala Phe Cys Phe Leu Pro Leu Ser Leu Glu Thr Gly
            2115   2120   2125
Leu Pro Phe His Val Asn Gly His Phe Ala Leu Asp Ser Ala Arg Arg
            2130   2135   2140
Asn Leu Trp Arg Asp Asp Asn Gly Val Gly Val Arg Ser Asp Trp Asn
2145   2150   2155   2160
Asn Ser Leu Met Thr Ala Leu Ile Ala Pro Ala Tyr Val Glu Leu Leu
            2165   2170   2175
Ile Gln Leu Lys Lys Arg Tyr Phe Pro Gly Ser Asp Pro Thr Leu Ser
            2180   2185   2190
Val Leu Gln Asn Thr Pro Ile His Val Val Lys Asp Thr Leu Lys Lys
            2195   2200   2205
Phe Leu Ser Phe Phe Pro Val Asn Arg Leu Asp Leu Gln Pro Asp Leu
            2210   2215   2220
Tyr Cys Leu Val Lys Ala Leu Tyr Asn Cys Ile His Glu Asp Met Lys
2225   2230   2235   2240
Arg Leu Leu Pro Val Val Arg Ala Pro Asn Ile Asp Gly Ser Asp Leu
            2245   2250   2255
His Ser Ala Val Ile Ile Thr Trp Ile Asn Met Ser Thr Ser Asn Lys
            2260   2265   2270
Thr Arg Pro Phe Phe Asp Asn Leu Leu Gln Asp Glu Leu Gln His Leu
            2275   2280   2285
Lys Asn Ala Asp Tyr Asn Ile Thr Thr Arg Lys Thr Val Ala Glu Asn
2290   2295   2300
Val Tyr Arg Leu Lys His Leu Leu Leu Glu Ile Gly Phe Asn Leu Val
2305   2310   2315   2320
Tyr Asn Cys Asp Glu Thr Ala Asn Leu Tyr His Cys Leu Ile Asp Ala
            2325   2330   2335
Asp Ile Pro Val Ser Tyr Val Thr Pro Ala Asp Ile Arg Ser Phe Leu
            2340   2345   2350
Met Thr Phe Ser Ser Pro Asp Thr Asn Cys His Ile Gly Lys Leu Pro
            2355   2360   2365
Cys Arg Leu Gln Gln Thr Asn Leu Lys Leu Phe His Ser Leu Lys Leu
2370   2375   2380
Leu Val Asp Tyr Cys Phe Lys Asp Ala Glu Glu Asn Glu Ile Glu Val
2385   ⁄ 2390   2395   2400
Glu Gly Leu Pro Leu Leu Ile Thr Leu Asp Ser Val Leu Gln Thr Phe
            2405   2410   2415
Asp Ala Lys Arg Pro Lys Phe Leu Thr Thr Tyr His Glu Leu Ile Pro
            2420   2425   2430
Ser Arg Lys Asp Leu Phe Met Asn Thr Leu Tyr Leu Lys Tyr Ser Asn
            2435   2440   2445
Ile Leu Leu Asn Cys Lys Val Ala Lys Val Phe Asp Ile Ser Ser Phe
            2450   2455   2460
Ala Asp Leu Leu Ser Ser Val Leu Pro Arg Glu Tyr Lys Thr Lys Ser
2465   2470   2475   2480
Cys Thr Lys Trp Lys Asp Asn Phe Ala Ser Glu Ser Trp Leu Lys Asn
            2485   2490   2495
Ala Trp His Phe Ile Ser Glu Ser Val Ser Val Lys Glu Asp Gln Glu
            2500   2505   2510
Glu Thr Lys Pro Thr Phe Asp Ile Val Val Asp Thr Leu Lys Asp Trp
            2515   2520   2525

Ala Leu Leu Pro Gly Thr Lys Phe Thr Val Ser Ala Asn Gln Leu Val
    2530   2535   2540
Val Pro Glu Gly Asp Val Leu Leu Pro Leu Ser Leu Met His Ile Ala
2545   2550   2555   2560
Val Phe Pro Asn Ala Gln Ser Asp Lys Val Phe His Ala Leu Met Lys
          2565   2570   2575
Ala Gly Cys Ile Gln Leu Ala Leu Asn Lys Ile Cys Ser Lys Asp Ser
        2580   2585   2590
Ala Leu Val Pro Leu Leu Ser Cys His Thr Ala Asn Ile Glu Ser Pro
        2595   2600   2605
Thr Ser Ile Leu Lys Ala Leu His Tyr Met Val Gln Thr Ser Thr Phe
    2610   2615   2620
Arg Ala Glu Lys Leu Val Glu Asn Asp Phe Glu Ala Leu Leu Met Tyr
2625   2630   2635   2640
Phe Asn Cys Asn Leu Asn His Leu Met Ser Gln Asp Asp Ile Lys Ile
        2645   2650   2655
Leu Lys Ser Leu Pro Cys Tyr Lys Ser Ile Ser Gly Arg Tyr Val Ser
        2660   2665   2670
Ile Gly Lys Phe Gly Thr Cys Tyr Val Leu Thr Lys Ser Ile Pro Ser
        2675   2680   2685
Ala Glu Val Glu Lys Trp Thr Gln Ser Ser Ser Ser Ala Phe Leu Glu
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Glu Lys Ile His Leu Lys Glu Leu Tyr Glu Val Ile Gly Cys Val Pro
2705   2710   2715   2720
Val Asp Asp Leu Glu Val Tyr Leu Lys His Leu Leu Pro Lys Ile Glu
        2725   2730   2735
Asn Leu Ser Tyr Asp Ala Lys Leu Glu His Leu Ile Tyr Leu Lys Asn
        2740   2745   2750
Arg Leu Ser Ser Ala Glu Glu Leu Ser Glu Ile Lys Glu Gln Leu Phe
        2755   2760   2765
Glu Lys Leu Glu Ser Leu Leu Ile Ile His Asp Ala Asn Ser Arg Leu
        2770   2775   2780
Lys Gln Ala Lys His Phe Tyr Asp Arg Thr Val Arg Val Phe Glu Val
2785   2790   2795   2800
Met Leu Pro Glu Lys Leu Phe Ile Pro Asn Asp Phe Phe Lys Lys Leu
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Glu Gln Leu Ile Lys Pro Lys Asn His Val Thr Phe Met Thr Ser Trp
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Val Glu Phe Leu Arg Asn Ile Gly Leu Lys Tyr Ile Leu Ser Gln Gln
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Gln Leu Leu Gln Phe Ala Lys Glu Ile Ser Val Arg Ala Asn Thr Glu
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Asn Trp Ser Lys Glu Thr Leu Gln Asn Thr Val Asp Ile Leu Leu His
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His Ile Phe Gln Glu Arg Met Asp Leu Leu Ser Gly Asn Phe Leu Lys
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Glu Leu Ser Leu Ile Pro Phe Leu Cys Pro Glu Arg Ala Pro Ala Glu
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Phe Ile Arg Phe His Pro Gln Tyr Gln Glu Val Asn Gly Thr Leu Pro
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Leu Ile Lys Phe Asn Gly Ala Gln Val Asn Pro Lys Phe Lys Gln Cys
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Asp Val Leu Gln Leu Leu Trp Thr Ser Cys Pro Ile Leu Pro Glu Lys
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Ala Thr Pro Leu Ser Ile Lys Glu Gln Glu Gly Ser Asp Leu Gly Pro
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Gln Glu Gln Leu Glu Gln Val Leu Asn Met Leu Asn Val Asn Leu Asp
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Ser Ile Tyr Glu Phe Leu Ser Ala Glu Lys Arg Glu Phe Arg Phe Gln
3025                3030                3035                3040
Leu Arg Gly Val Ala Phe Val Met Val Glu Asp Gly Trp Lys Leu Leu
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Lys Pro Glu Glu Val Val Ile Asn Leu Glu Tyr Glu Ser Asp Phe Lys
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Pro Tyr Leu Tyr Lys Leu Pro Leu Glu Leu Gly Thr Phe His Gln Leu
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Phe Lys His Leu Gly Thr Glu Asp Ile Ile Ser Thr Lys Gln Tyr Val
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Glu Val Leu Ser Arg Ile Phe Lys Asn Ser Glu Gly Lys Gln Leu Asp
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Pro Asn Glu Met Arg Thr Val Lys Arg Val Val Ser Gly Leu Phe Arg
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Ser Leu Gln Asn Asp Ser Val Lys Val Arg Ser Asp Leu Glu Asn Val
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Arg Asp Leu Ala Leu Tyr Leu Pro Ser Gln Asp Gly Arg Leu Val Lys
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Ser Ser Ile Leu Val Phe Asp Asp Ala Pro His Tyr Lys Ser Arg Ile
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Gln Gly Asn Ile Gly Val Gln Met Leu Val Asp Leu Ser Gln Cys Tyr
3185                3190                3195                3200
Leu Gly Lys Asp His Gly Phe His Thr Lys Leu Ile Met Leu Phe Pro
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Gln Lys Leu Arg Pro Arg Leu Leu Ser Ile Leu Glu Glu Gln Leu
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Asp Glu Glu Thr Pro Lys Val Cys Gln Phe Gly Ala Leu Cys Ser Leu
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Gln Gly Arg Leu Gln Leu Leu Leu Ser Ser Glu Gln Phe Ile Thr Gly
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Leu Ile Arg Ile Met Lys His Glu Asn Asp Asn Ala Phe Leu Ala Asn
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Glu Glu Lys Ala Ile Arg Leu Cys Lys Ala Leu Arg Glu Gly Leu Lys
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Val Ser Cys Phe Glu Lys Leu Gln Thr Thr Leu Arg Val Lys Gly Phe
            3300                3305                3310
Asn Pro Ile Pro His Ser Arg Ser Glu Thr Phe Ala Phe Leu Lys Arg
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Phe Gly Asn Ala Val Ile Leu Leu Tyr Ile Gln His Ser Asp Ser Lys
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Asp Ile Asn Phe Leu Leu Ala Leu Ala Met Thr Leu Lys Ser Ala Thr
3345                3350                3355                3360
Asp Asn Leu Ile Ser Asp Thr Ser Tyr Leu Ile Ala Met Leu Gly Cys
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Asn Asp Ile Tyr Arg Ile Gly Glu Lys Leu Asp Ser Leu Gly Val Lys
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Tyr Asp Ser Ser Glu Pro Ser Lys Leu Glu Leu Pro Met Pro Gly Thr
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Pro Ile Pro Ala Glu Ile His Tyr Thr Leu Leu Met Asp Pro Met Asn
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Val Phe Tyr Pro Gly Glu Tyr Val Gly Tyr Leu Val Asp Ala Glu Gly
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Gly Asp Ile Tyr Gly Ser Tyr Gln Pro Thr Tyr Thr Tyr Ala Ile Ile
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Lys Ile Tyr Gln Ile Asp Ile Gly Tyr Ser Glu Tyr Lys Ile Val Ser
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Ser Leu Asp Leu Tyr Lys Phe Ser Arg Pro Glu Glu Ser Ser Gln Ser
           3490   3495   3500
Arg Asp Ser Ala Pro Ser Thr Pro Thr Ser Pro Thr Glu Phe Leu Thr
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Pro Gly Leu Arg Ser Ile Pro Pro Leu Phe Ser Gly Arg Glu Ser His
           3525   3530   3535
Lys Thr Ser Ser Lys His Gln Ser Pro Lys Lys Leu Lys Val Asn Ser
           3540   3545   3550
Leu Pro Glu Ile Leu Lys Glu Val Thr Ser Val Val Glu Gln Ala Trp
           3555   3560   3565
Lys Leu Pro Glu Ser Glu Arg Lys Lys Ile Ile Arg Arg Leu Tyr Leu
           3570   3575   3580
Lys Trp His Pro Asp Lys Asn Pro Glu Asn His Asp Ile Ala Asn Glu
3585   3590   3595   3600
Val Phe Lys His Leu Gln Asn Glu Ile Asn Arg Leu Glu Lys Gln Ala
           3605   3610   3615
Phe Leu Asp Gln Asn Ala Asp Arg Ala Ser Arg Arg Thr Phe Ser Thr
           3620   3625   3630
Ser Ala Ser Arg Phe Gln Ser Asp Lys Tyr Ser Phe Gln Arg Phe Tyr
           3635   3640   3645
Thr Ser Trp Asn Gln Glu Ala Thr Ser His Lys Ser Glu Arg Gln Gln
           3650   3655   3660
Gln Asn Lys Glu Lys Cys Pro Pro Ser Ala Gly Gln Thr Tyr Ser Gln
3665   3670   3675   3680
Arg Phe Phe Val Pro Pro Thr Phe Lys Ser Val Gly Asn Pro Val Glu
           3685   3690   3695
Ala Arg Arg Trp Leu Arg Gln Ala Arg Ala Asn Phe Ser Ala Ala Arg
           3700   3705   3710
Asn Asp Leu His Lys Asn Ala Asn Glu Trp Val Cys Phe Lys Cys Tyr
           3715   3720   3725
Leu Ser Thr Lys Leu Ala Leu Ile Ala Ala Asp Tyr Ala Val Arg Gly
           3730   3735   3740
Lys Ser Asp Lys Asp Val Lys Pro Thr Ala Leu Ala Gln Lys Ile Glu
3745   3750   3755   3760
Glu Tyr Ser Gln Gln Leu Glu Gly Leu Thr Asn Asp Val His Thr Leu
           3765   3770   3775
Glu Ala Tyr Gly Val Asp Ser Leu Lys Thr Arg Tyr Pro Asp Leu Leu
           3780   3785   3790
Pro Phe Pro Gln Ile Pro Asn Asp Arg Phe Thr Ser Glu Val Ala Met
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Asp Ala Asn Ala Thr Glu Cys Ser Phe Leu Ile Asp Met Arg Arg Asn
            35   40   45
Met Asp Ile Arg Glu Asn Leu Leu Asp Pro Gly Met Ala Ala Cys His
        50   55   60
Gly Pro Ala Leu Trp Ser Phe Asn Asn Ser Gln Phe Ser Asp Ser Asp
65   70   75   80
Phe Val Asn Ile Thr Arg Leu Gly Glu Ser Leu Lys Arg Gly Glu Val
                85   90   95
Asp Lys Val Gly Lys Phe Gly Leu Gly Phe Asn Ser Val Tyr His Ile
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